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Part III

Environmental Protection Agency

Water Programs; State Underground Injection Control Programs; Minimum Requirements and Grant Regulations

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 146]

Water Programs; State Underground Injection Control Programs

AGENCY: Environmental Protection Agency.

ACTION: Reproposal of rules.

SUMMARY: The Safe Drinking Water Act requires EPA to develop minimum requirements for State Programs to protect underground drinking water sources. EPA proposed regulations specifying minimum requirements on August 31, 1976 (41 FR 36730). In response to numerous public comments, EPA has made significant changes in the regulations.

The regulations have also been separated into two portions. *First,* regulations under 40 CFR Parts 122, 123, and 124 will consolidate the procedural requirements for the Agency's major permit programs. Part 122 will contain the basic framework of the underground injection control program (as well as NPDES under the Clean Water Act and the hazardous waste management program under the Resource Conservation and Recovery Act) when administered by EPA. Part 123 will specify the requirements for an approvable State program, and Part 124 will describe the procedures for issuing permits under the covered programs. These regulations will be proposed in the near future. *Second,* 40 CFR Part 146 establishes the technical criteria and standards to be used in implementing the underground injection control program. Part 146 is the regulation reproposed here today for further public comment.

DATES: Public comments may be made on or before August 20, 1979, either in writing or at the informal public hearings to be held at the times and places listed immediately below.

ADDRESSES: Written public comments should be sent to the Comment Clerk UIC Program Regulations, Office of Drinking Water (WH–550), EPA, Washington, D.C. 20460.

Joint informal public hearings will be held on the consolidated permit regulations and this reproposed Part 146 in Dallas, Chicago, Seattle and Washington, D.C. beginning in July of this year. The specific times and places of these public hearings will be announced in the **Federal Register** in the near future.

FOR FURTHER INFORMATION CONTACT: Thomas E. Belk, EPA Office of Drinking Water (WH–550), Washington, D.C. 20460, (202) 426–3934

SUPPLEMENTARY INFORMATION:

Statutory Background

General

These regulations are being proposed under the authority of the Safe Drinking Water Act (the "Act"), Pub. L. 93–523, December 16, 1974, as amended by Pub. L. 95–190, November 16, 1977. The Act is designed to protect the quality of drinking water in the United States.

Part A of the Act (section 1401) contains definitions. Part B (sections 1411–1416) addresses the quality of water provided by public water supplies. EPA's regulations implementing Part B of the Act are codified at 40 CFR Parts 141 and 142.

The proposal below relates to Part C of the Act (sections 1421–1424), entitled "Protection of Underground Sources of Drinking Water." These regulations, when promulgated, will become Part 146 of 40 CFR.

Basis for Concern

The legislative history of the Act reflects the basic Congressional concerns in enacting Part C of the Act:

> * * * underground injection of contaminants is clearly an increasing problem. Municipalities are increasingly engaging in underground injection of sewage, sludge, and other wastes. Industries are injecting chemicals, by-products, and wastes. Energy production companies are using injection techniques to increase production and to dispose of unwanted brines brought to the surface during production. Even government agencies, including the military are getting rid of difficult to manage waste problems by underground disposal methods. Part C is intended to deal with all of the foregoing situations insofar as they may endanger underground drinking water sources.
>
> (H.R. No. 93–1185, July 10, 1974, p. 29.)

The potentially dangerous practices which Congress sought to control in 1974 continue at an ever-increasing rate. EPA estimates that there are in excess of 500,000 municipal, industial, commercial, agricultural, and domestic wells currently injecting fluids below the surface, and that there are at least 5,000 new wells of these types each year. The purpose of Part C of the Act, and of the regulations proposed below, is to establish a Federal-State system of controls which will insure that such underground injection practices do not endanger drinking water sources.

Relevant Statutory Provisions

A detailed discussion of the relevant statutory provisions and legislative history appears in EPA's initial proposal of these regulations (41 FR 36730 *et seq.,* August 31, 1976). Those details need not be repeated here, but it is useful to summarize the basic scheme of Part C of the Act.

1. § *1422(a): List of States*—section 1422(a) requires EPA to list in the **Federal Register** each State for which an underground injection control program "may be necessary" to insure that underground injections will not endanger drinking water sources. EPA recently published its initial list of States (43 FR 43420, September 25, 1978).

Twenty-two States are on the initial list:

> Arizona, Arkansas, California, Colorado, Florida, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Mississippi, New Mexico, New York, Ohio, Oklahoma, Pennsylvania, Texas, Utah, West Virginia, Wyoming.

In addition, Maryland has petitioned to be listed in this initial group of States. As noted in House Report No. 93–1185, Congress clearly comtemplated that all States, Territories, and Possessions, should eventually be listed. Accordingly, EPA plans to use a phased approach, listing 16 additional States and Territories in May of 1979 and the remaining ones in May 1980. This schedule will bring the disposal of hazardous wastes through well injection under regulatory control in parallel to the control of surface disposal of hazardous wastes under the Resource

Conservation and Recovery Act (RCRA) Pub. L. 94–580, October 21, 1976.

2. § *1421: Minimum Requirements for State Programs*—§ 1421 requires EPA to propose and promulgate regulations specifying "minimum requirements" for State programs to prevent underground injections which endanger drinking water sources. Such minimum requirements must provide for at least the following:

- A program prohibiting any underground injection which is not authorized by a State permit. EPA may at its discretion, however, allow some or all underground injections to be authorized by general State rules without case-by-case permits (§ 1421(b)(1)(A)).
- Protection of underground drinking water sources.
- Inspection, monitoring, record-keeping, and reporting requirements (§ 1421(b)(1)(C)).
- Coverage of underground injections by Federal agencies and underground injections by any person on property owned or leased by the United States (§ 1421(b)(1)(D)).

3. § *1422(b)–(d): Development of Underground Injection Control Programs*—Once EPA has promulgated the "minimum requirements" regulations, each State which has been listed under § 1422(c) will have the opportunity to develop an enforceable underground injection control program (hereafter "UIC program"). The UIC program must be adopted after reasonable notice and public hearings, and must comply with the minimum requirements.

Each State will have 270 days to develop its UIC program and submit it to EPA for review. EPA may for good cause extend this deadline for any State by an additional 270 days. If EPA determines that a State UIC program meets the minimum requirements of Parts 123 and 146, EPA will approve the program. The State will then be deemed to have "primary enforcement responsibility" under Part C of the Act, and there will be no Federal UIC enforcement actions in that State so long as the State continues to meet its responsibilities.

If a State fails to adopt and submit a UIC program in a timely fashion, or if EPA finds that a State's UIC Program fails in part or in whole to meet the minimum requirements of Parts 123 and 146, EPA is required to propose and promulgate remedial Federal regulations to be effective in that State. In such an event, a State will not be deemed to have "primary enforcement responsiblity," and direct Federal enforcement of the UIC program will result (§ 1422(b)–(c), 1423). In addition, a State which fails to achieve full primacy within two years of the award of its first UIC grant loses eligibility for further Federal grants.

4. *The 1977 Amendments*—Although they do not vary the operating scheme of Part C of the Act, the 1977 Amendents to the Act, Pub. L. 95–190, should be noted. In addition to allowing a 270 day extension for State submissions of requests for approval of State Programs (See above), they emphasize that States have jurisdiction over Federal agencies which engage in well injection activity. Federal agencies fall under State regulation as would any other "person" (§ 1447(a)). With respect to injection wells on Indian lands, however, jurisdiction remains with EPA (§ 1447(c)).

New § 1421(b)(3) instructs EPA to permit consideration of varying geologic, hydrologic, and historic conditions among States. The Section further cautions EPA against fashioning minimum requirements regulations which would "unncessarily disrupt" existing State underground injection control programs now being enforced. These considerations, however, may not be used to compromise the overall statutory requirement to prevent endangerment to underground sources of drinking water (§ 1421(b)(3)(C)). EPA believes that these reproposed regulations amply serve these interests: The regulations offer States discretion to tailor local programs to meet specific needs and to consider geologic, hydrologic, and historic conditions in fashioning rules and permit requirements.

Initial Proposal and Comments

EPA initially proposed a comprehensive set of "minimum requirements" regulations to be codified in 40 CFR Part 146 on August 31, 1976 (41 FR 36730–36745). Four hundred twenty-nine written comments were filed, and many persons commented at public hearings in Dallas, Denver, and Washington, D.C.

EPA has carefully considered all written and oral comments and determined that many significant changes should be made to the initial proposal. In order to insure meaningful public participation, EPA has decided to publish these significantly revised regulations in proposed form for additional public comment.

EPA has determined, in considering the public comments, that there are many ways that the initial proposal can be made generally more flexible and less burdensome without sacrificing the resulting environmental protection to any significant degree. A summary of the most important comments and EPA's responses thereto is published below as "Appendix A" to this Notice.

The Reproposed Regulations

Organization

The original UIC proposal in 1976 included the grant regulations and the program regulations proposed as Part 146. The grant regulations were promulgated on October 12, 1978 (43 FR 47130, *et seq.*). As discussed above, an initial list of 22 States has also been published.

In the fall of 1978, the Agency decided to consolidate the regulations for its major permit programs: the hazardous waste management program under the Resource Conservation and Recovery Act (RCRA); the UIC program under the Safe Drinking Water Act (SDWA); and the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act (CWA). The proposed consolidated regulations will be published in the near future as revisions to 40 CFR Parts 122, 123, and 124, which at present contain only the NPDES program regulations.

As a consequence of this decision the requirements for the UIC program will now appear in four places:

- 40 CFR Part 122 will define the regulatory framework for the UIC program.
- 40 CFR Part 123 will describe the elements of an approvable State program and establish the process for EPA approval of State participation in the UIC program.
- 40 CFR Part 124 will describe the procedures for permit application and issuance which EPA will follow when it has primacy. Certain provisions of 40 CFR Part 124 also apply to State UIC programs.
- 40 CFR Part 146 (being proposed here) will establish the technical criteria and standards to be used by EPA or the State in implementing a UIC program.

The Proposed Consolidated Regulations

Each of the proposed consolidated regulations will be divided into four Parts: A general Subpart which includes requirements applicable to all three permit programs and three other Subparts each applicable to one of the programs specifically. The following paragraphs provide a brief summary of the proposed requirements applicable to the UIC program.

1. *40 CFR Part 122*—This Part will articulate the regulatory framework of the SDWA. The UIC program requires

the containment of injection and formation fluids through the imposition of technological requirements. The most important requirements in this regard are that the well be sound (mechanical integrity) and that man-made conduits that permit the movement of fluids into underground sources of drinking water be properly sealed (corrective action in the area of review). Should the technical construction and operating requirements prove insufficient to assure the safety of underground sources of drinking water in a particular instance, additional requirements, including the proper abandonment of the well, may be imposed.

Some of the more important elements of 40 CFR Part 122 are noted below.

a. *Definitions*—40 CFR 122.3 will contain the definitions applicable to all three major permit programs. Of importance to the UIC program is the definition of "*well injection*" as "subsurface emplacement of fluids through a bored, drilled, or driven well; or through a dug well where the depth is greater than the largest surface dimension and a principal function of the well is the subsurface emplacement of fluids." This definition, essentially in three parts, first extends coverage to "subsurface emplacement" of any character. Both gravity flow injection and pressure induced injection are included. Second, the definition extends to all "fluids" defined, in accordance with the legislative history (H.R. No. 93–1185, p. 31), as any "material which flows or moves whether semisolid, liquid, sludge or any other form or state." Third, the definition covers all wells, not simply "conventional" deep wells. Drilled, bored and driven wells are expressly within the definition. Dug wells and non-residential septic tanks also fall under the term.

Although the definition is broad, it is not without limitation. It does not cover simple depressions in the land or single-family domestic cesspools or septic systems. Nor does it cover surface impoundments. Whether these regulations should impose conditions on surface impoundments, generally referred to as "pits, ponds, and lagoons," has been a matter of considerable concern within EPA due to the serious threat to groundwater which they pose. (See "Report to Congress—Waste Disposal Practices and Their Effects on Groundwater," January 1977, prepared by EPA in accordance with Section 1442(a)(4) of the Act, and "Surface Impoundments and Their Effects on Ground Water Quality in the United States—A Preliminary Survey," June 1978, EPA 570/9–78–004.)

It should be noted that under RCRA (the proposed hazardous waste management program, 40 CFR Part 250, and the proposed State Solid Waste Disposal Program, 40 CFR Part 257), EPA is preparing standards to control contamination from surface impoundments. Also, EPA is conducting a comprehensive assessment of surface impoundments which focuses on those receiving industrial, oil and gas, mining, municipal, and agricultural wastes. That effort, in conjunction with the RCRA efforts, should generate data by mid-1980 upon which to decide whether further regulatory programs are necessary.

The basic purpose of these regulations is to provide a framework for State programs which assure that underground injections will not "endanger" drinking water sources (§ 1421(b)(1)(B)). The definition of "endanger" in the Act is extremely broad:

> Underground injection endangers drinking water sources if such injection may result in the presence in underground water which supplies or can reasonably be expected to supply any public water system of any contaminant, and if the presence of such contaminant *may* result in such system's not complying with any national primary drinking water regulation *or may otherwise adversely affect the health of persons.* § 1421(d)(2), (emphasis added).

The legislative history directs that this definition be "liberally construed so as to effectuate the preventive and public health purposes of the bill * * * It is important to note that actual contamination of drinking water is not a prerequisite either for the establishment of regulations or permit requirements or for the enforcement thereof" (H.R. 93–1185, p. 32).

In its initial proposal, EPA formulated a definition of "endanger" which expanded upon the statutory definition (41 FR 36733). Upon consideration of the comments, EPA has determined that its proposed definition was unduly vague and confusing.

This reproposal, therefore, avoids the term "endangerment." EPA still intends to accomplish the statutory goal of "preventing endangerment to underground sources of drinking water"—no change in this regard is contemplated. Rather, our intention has been to fashion a test of "endangerment" that is workable and reduces uncertainty.

The test in these reproposed regulations is whether injection operations will cause the migration of injected or formation fluids into an underground source of drinking water. If injection into a well can cause such migration, the owner/operator must take appropriate action to eliminate the fluid migration.

EPA believes this approach is fully in keeping with the statute and its legislative history, and offers a primary advantage missing in our previous approach: Under this scheme, case-by-case decisions regarding well injection will rely more on physical data than on subjective judgment. Shifting the basis of decision-making in this way should make the regulatory scheme more easily understood and should remove a considerable degree of uncertainty. As with all other elements of this reproposal, EPA solicits public comments.

b. *Well classification*—Injection well practices are divided into five classes:

- Class I includes industrial and municipal disposal wells and nuclear storage and disposal wells that inject below all underground sources of drinking water in the area.
- Class II includes all injection wells associated with oil and gas storage and production.
- Class III includes all special process injection wells, for example, those involved in the solution mining of minerals, *in situ* gasification of oil shale, coal, etc., and the recovery of geothermal energy.
- Class IV includes wells used by generators of hazardous wastes or hazardous waste management facilities to inject into or above underground sources of drinking water.
- Class V includes all other injection wells.

c. *Application of controls*—40 CFR Part 122 will specify that injection into wells in Classes I, II (except existing enhanced recovery and hydrocarbon storage wells), and III must be authorized by permits obtained within five years of the effective date of the UIC program. Until the applicable permit is issued, these wells may be authorized by rules which are to apply certain requirements, for example, monitoring, reporting, and restrictions on abandonment. In addition, Class II existing enhanced recovery and hydrocarbon storage injection wells, and Class IV and V wells may be controlled through rules. These rules are also to apply minimum requirements.

At one point in developing these regulations, EPA contemplated subjecting only wells that inject into, through or above drinking water sources to these regulations. On further consideration, it appeared that such a formulation could, in some instances,

leave the owner or operator of a particular injection well uncertain of whether he is or is not subject to these regulations. Furthermore, a well might not inject into, through or above a drinking water source, yet still endanger if the injection zone were hydraulically connected with an underground source of drinking water.

To avoid these results, this proposal applies these regulations to all injection wells. One result of this decision is that off-shore injection operations would be subject to the UIC regulations. Comments are solicited on this decision. In particular, the Agency seeks data on off-shore injection operations, instances of hydraulic connection between off-shore injection zones and underground sources of drinking water, and any special problems, if any, posed by the inclusion of off-shore wells under Class V.

d. *Permits*—These regulations will allow for a two-step permit application process in cases where the well in question is currently permitted under an existing State program. In such cases, the applicant may file a simplified initial application. The State Director will then specify the additional information to be submitted by the applicant. Such a two-step process has the advantage of allowing the permitting authority to excuse an applicant from resubmitting information in support of his application if that information is already available to the permitting authority in an accurate, timely and complete form. Applicants for new permits or for EPA issued permits must initially submit all the information required in applicable portions of 40 CFR Part 146.

The regulations also provide for "area" permits where a number of injection wells within a single parcel of land under the control of the same individual would be issued a single permit. Additional wells of similar construction in the area could be authorized administratively without the necessity of going through the formal permit issuance process.

EPA also recognizes that in extraordinary circumstances, for example in the case of a toxic chemical spill or where the interruption of a production process will lead to the irretrievable loss of natural resources, injection not authorized by rule or permit may become necessary. In such cases, the Director my immediately grant extraordinary authorization to inject, subject to subsequent review of the circumstances. Such authorization may be granted for not more than 90 days. However, if a permit to conduct such injection is applied for, the authorization may be extended until the permit application can be reviewed and issued or denied.

Part 122 will also specify that UIC permits may be issued for the life of the facility. However, if the facility holds tow or more EPA permits, the permitting authority must review the UIC permit whenever another EPA permit expires, but at least once every five years. Based upon the review, the permitting authority must determine whether or not to modify or to reopen the UIC permit.

Finally, 40 CFR Part 122 will detail the minimum conditions that must be stipulated in each permit and specify the circumstances in which an operator's permit may be modified, suspended, or revoked.

e. *Financial responsibility*—The permitee is required to assure adequate resources, for example in the form of a performance bond or a trust fund, to close, plug and abandon the well as prescribed by the permitting authority.

2. *40 CFR Part 123*—This Part of the consolidated permit regulations will define the requirements that a State must meet to obtain EPA approval to operate one of the three permit programs, as well as a fourth progrm which is to be consolidated only in its State approval aspects—the dredge and fill permit program under § 404 of the CWA.

State programs will be required to adopt the applicable provisions as stated in the regulations. The need for variation to acommodate differences among States, however, is recognized by providing flexibility in the statement of the underlying requirement itself.

The following sections summarize the major requirements of 40 CFR Part 123.

a. *Elements of an approvable State UIC program*—In order to obtain EPA approval for primacy, a State must demonstrate the intent, adequate legal authority and resources to implement the following program elements:

- Designate underground sources of drinking water within the State;
- Develop and maintain an inventory of injection wells;
- Issue permits or rules that incorporate Federal requirements for applicant signature, duration and coverage;
- Stipulate permit conditions that incorporate Federal requirements for construction, operation, monitoring, record-keeping, and reporting by the permittee;
- Conduct a program of inspection and surveillance of operating facilities;
- Enforce all program requirements through a range of enforcement tools including injunctive relief, civil penalties and criminal penalties; and
- Assess maximum civil and criminal fines the same as the maximums specified in Federal law.

EPA solicits comments on the requirements for enforcement authority. In particular, the Agency seeks data with regard to the number of States which do not now have the authority to apply either the enforcement tools specified or the Federal maximums in the case of civil or criminal fines.

b. *EPA approval*—The Administrator is to approve State participation in the UIC program within 90 days of the receipt of a complete application submitted by the State after public hearings and comments. EPA, prior to approval, must provide the opportunity for public comment and hearings. The public participation requirements will be discussed further under 40 CFR Part 124.

A complete State application must contain:

- A letter from the Governor requesting approval;
- An Attorney General's statement demonstrating that adequate legal authority exists to carry out the UIC program;
- A full description of the program the State intends to carry out, including the designation of underground sources of drinking water, a phased priority plan for repermitting existing facilities, plans for regulating by rule, methods for establishing and maintaining inventories of wells by class, and plans for implementing requirements for wells in Classes IV and V;
- Copies of all program forms to be used by the State if other than the uniform national forms; and
- A memorandum of agreement between EPA and the State which is to embody the respective rights and responsibilities in implementing a delegated UIC program.

A State need not develop a regulatory program for a type of injection well which does not exist in that State. This provision is intended to relieve the State of a pointless burden. However, the State must, in such case, adopt a rule to regulate that class of wells to preclude the possibility of unregulated injection should such wells seek to operate in the State in the future. Comments are solicited on this approach.

EPA may in its discretion, approve a State program in whole or in part. In the case of partial approval, the Agency's intention is to approve only a complete program by type of well. In other words, EPA would authorize a State to regulate, for example, Frasch process wells or hydrocarbon storage wells if it had the

necessary legal authority and were prepared to carry out the full range of regulatory requirements applicable to such wells. However, the Agency does not intend to approve a portion of a State program if the program provides only for partial regulation, i.e., if it provided for State issuance of permits to Frasch process wells but left enforcement up to EPA. The Agency believes that this approach is sensible from an administrative point of view and is least confusing. Comments are solicited on the advisability of this approach.

Finally, it should by noted that the 1977 Amendments to the Act have clarified State authority over Federal facilities within its boundaries (§§ 1447(a), 1421(b)(1)(D)). Management of wells on Indian lands remains an EPA responsibility unless the State has adequate authority to implement the program (§ 1447(c)).

In cases where the State is developing an application for primacy, EPA intends to promulgate the UIC program for which it is responsible (i.e., on Indian lands) at the same time as it approves the State program. In cases where a State program is disapproved, EPA will promulgate a UIC program, including the portions for which it has original jurisdiction, within the 90 days from disapproval specified in the Act. If a State informs EPA that the State does not intend to seek primary enforcement responsibility, EPA will promulgate the whole UIC program for the State within one year (270 days plus 90 days approval process) of the effective date of these regulations.

c. *Oversight*—EPA will exercise oversight of State UIC programs. To enable EPA to carry out this responsibility, 40 CFR Part 123 requires States to provide to the Agency the following:

- Access to State files and documents;
- Annual reports;
- Quarterly reports on the compliance status of major (Class I and Class IV) wells; and
- A mid-course review after the first year of program operation to assess the requirement to perform corrective action in the area of review. The State analysis will be used by EPA to assess the associated costs and environmental benefits, and may result in appropriate changes in the requirement.

Moreover EPA retains the authority to take Federal enforcement action against a permittee if a State fails to exercise adequate enforcement; the authority to propose revisions in a State program; and the authority to withdraw approval of a State program.

Procedures for the withdrawal of approval from a State program will provide ample opportunity for the State to present its case to retain primacy. If the Administrator has cause to believe that a State is not in compliance with the Act or these regulations, he must give the State 30 days of notice to demonstrate its compliance. If not satisfied, the Administrator must convene a public hearing in not less than 60 days after notice of the hearing. If, after the hearing, the Administrator concludes that the State is not in compliance, he must notify the State of the particulars. The State then has 90 days to give up the program or come into compliance.

3. *40 CFR Part 124*—This Part will establish the permit procedures to be followed when EPA is the permit issuing authority. Some elements of the process are established in 40 CFR Part 123 as requirements for States as well. This Part will address, among other concerns: (1) The coordination of multiple permits issued to the same facility; and (2) requirements for adequate public participation.

a.*Permit coordination*—In the case of multiple permits for the same facility, an application for a permit may be delayed up to 2½ years, subject to the approval of the Administrator, so that the timing of the issuance and subsequent periodic reviews can be brought into alignment. Processing of different permits may also be consolidated and, if the State agrees, the State and EPA can consolidate the process for issuing permits to the same facility in cases where one program has been delegated and another has not.

These requirements are *not* mandatory in a State program but a State with one or more programs is encouraged to use or participate in consolidated procedures.

b. *Public participation*—States are required to assure adequate public participation in their decision-making processes. Adequate public participation must meet five tests:

- Public notice is required to inform the interested public either through: (1) A newspaper or bulletin of general circulation; (2) posting at a U.S. Post Office and the principal office of the municipality or political subdivision affected by the activity; (3) a mailing list of interested persons; or through (4) existing State notice mechanisms which are equally effective.
- Opportunity for public comment shall be given for at least 30 days;
- Opportunity for public hearing shall be provided and notice of a hearing given at least 30 days prior to the event;
- The public shall be informed of the availability of documents and given information on how and where the documents may be inspected and at what cost they may be obtained;
- Notices shall be accompanied by fact sheets or statements of basis that provide sufficient information so that the public can tell what the proposed action is about; and
- Responsiveness summaries, which account for the disposition of public comments, shall be prepared in support of final actions.

Comments are requested on the adequacy of these public participation requirements. Particularly, EPA seeks data on States which now lack the legal authority to implement these requirements and instances where these requirements may significantly disrupt existing State programs.

The Reproposed 40 CFR Part 146

In its final form, the reproposed 40 CFR Part 146 will contain only the technical criteria and standards to be used in implementing the UIC program. In order to make this reproposal more comprehensible, selected programmatic requirements have been repeated even though they duplicate portions of 40 CFR Part 122. These requirements have been carefully crafted to reflect both the public comments received to date and the Agency's better understanding gained through additional studies of the activities to be regulated.

EPA believes that this reproposal represents a more flexible and workable regulatory scheme. For example, the requirements for a State inventory and assessment of "pits, ponds and lagoons" has been deleted. Wells have been reclassified to permit greater consistency in the applicability of requirements. Certain forms of annular injections that would have been prohibited previously are now permitted. Only injection between the outermost casing protecting underground sources of drinking water and the well bore remains forbidden.

40 CFR Part 146 is organized into six Subparts. Subpart A deals with general concepts. Subparts B–F detail the construction, abandonment, operating, monitoring and reporting requirements for each of the five classes of wells.

1. *Subpart A*—This Subpart provides technical guidance for five fundamental requirements established in 40 CFR Part 122.

a. *Designation of underground sources of drinking water*—The definition of

"underground sources of drinking water" received extensive discussion in the legislative history. The Committee Report to the Act instructed EPA to construe the term liberally: both currently-used and potential drinking water sources warrant inclusion in the definition. Even aquifers which currently cannot provide potable water need not be excluded. As a guide to the Agency, the Report suggested that aquifers with fewer than 10,000 parts per million of total dissolved solids (ppm or mg/1 of TDS) be included (H.R. No. 93–1185, p. 32).

EPA's proposed definition accordingly includes all aquifers or their portions which are currently providing drinking water and, as a general rule, all aquifers or their portions with fewer than 10,000 ppm/TDS. However, as explained in the preamble to the initial proposal (41 FR 36733), a numerical cutoff cannot always accurately establish which portions of aquifers have real potential to become drinking water sources. For example, an aquifer which meets the 10,000 ppm/TDS standard still might never provide potable water because of severe contamination other than in the form of dissolved solids. Similarly, aquifers which comply with the numerical test may be located so far from any population centers or may be so far below the land surface as to make their potential for use as a source of drinking water extremely remote.

To reflect these facts, this proposal allows but does not require States to exclude portions of aquifers which are not in a real sense potential drinking water sources. A State may exclude an aquifer or a portion which does not currently provide drinking water if it can demonstrate that such an aquifer or its portion cannot reasonably be expected to do so because it is mineral, oil or geothermal energy producing, or is situated at such a depth or location, or is so contaminated that recovery of water for drinking purposes is technologically or economically impractical.

State determinations to designate and exclude portions of aquifers are subject to public comment and hearings and will be reviewed by EPA as part of the basic UIC program approval process.

The recently proposed hazardous waste regulations (43 FR 58999) do not provide for any exceptions to the definition of underground sources of drinking water. Despite this difference, EPA believes that the two approaches will, in practice, produce a result that is consistent. Because of the nature of hazardous waste management facilities, the impact of these facilities will be on the surficial aquifers, i.e., the aquifers closest to the land surface. Since these are the aquifers which are normally used for human consumption, it is appropriate for EPA to take a more stringent approach to their protection. Both the hazardous waste and UIC regulations are consistent in intending this stringent level of protection for surficial aquifers.

First, virtually every surficial aquifer in the United States currently serves as a source of drinking water and, we expect, therefore, will be designated and protected as such under both programs. Second, injection wells in Classes I–III which pass through the surficial aquifer will have to meet requirements for casing and cementing that protect that aquifer. Class IV wells, which may be injecting directly into surficial aquifers, are to be banned. The regulatory approach proposed for Class V wells, which also may inject directly into surficial aquifers, requires immediate action with respect to injections that pose a significant risk to human health; additional Federal regulatory requirements will be forthcoming as soon as the Agency gains a better understanding of these wells and their impacts.

Generally, the exceptions allowed in the UIC program will come into play, if at all, with regard to deeper aquifers (which are not of concern in hazardous waste management) and then only if the portions of the aquifer do not have a real potential to serve as drinking water sources. The approach makes it possible to avoid potentially burdensome requirements in specific instances when little environmental purpose would be served.

The intent of the exemption of mineral, oil or geothermal producing portions of aquifers from designation as underground sources of drinking water is to allow current production in such aquifers to continue undisrupted by these regulations. The exemption is not intended as a green light to exempt any aquifer or its portion which merely has the potential to be used in the future for production purposes. Such aquifers should be designated. However, potential producers/injectors may at any time petition the State to exempt a portion of an aquifer on this ground, subject to the public notice and EPA approval requirements of 40 CFR 122.33.

EPA has considered placing limitations on the use of this exemption to insure that the resulting injection relates only to the recovery of the resource in question and does not extend to unrelated and uncontrolled injection activity, for example, the disposal of hazardous waste. Such limitations could, for example, take the form of: (1) Restricting the geographical extent of the exemption to the area of the ore body or resource deposit; (2) specifying that the exemption is only for a specified recovery operation and precluding all injection except those necessary to carry on the extractive process; or (3) specifying that the exemption is only for the life of the extraction operation, after which the aquifer portion once more becomes protected. While such limitations seem desirable, they may constitute economic and other variances from the mandate to protect underground sources of drinking water. Such variances may not be allowed under the Act. Comments and information are requested on whether such limitations would be desirable, whether they would interfere with or impede resouce recovery, and how such workable limitations could be established.

Comments are also solicited on the other two exemptions, which deal with whether an aquifer or its portion can reasonably be expected to be used as a source of drinking water. Are these exemptions necessary or desirable? If so, does the concept of "impractical" need to be defined in terms of future importance of drinking water resources, future technological developments, length of time or other factors?

The Agency generally solicits comments on the appropriateness of the definition offered here for the UIC program and on the desirability of a single definition for all EPA programs.

b. *Mechanical integrity*—Mechanical integrity is defined as: (1) The absence of significant leaks through the tubing, packer, or casing; and (2) the absence of fluid migration between the outer casing and the well bore. All wells (except Classes IV and V) will have to demonstrate mechanical integrity, through well construction records or specific tests, initially and every five years thereafter. While § 146.08 lists the tests that may be used to demonstrate each of the two conditions of mechanical integrity, additional flexibility has been provided in allowing the use of other tests, present, or future, with the approval of the Administrator. EPA believes that this approach provides a workable method for the verification of continued well integrity while avoiding unnecessary and expensive burdens on the operators.

As proposed here, all injection wells in Classes I—III would have to demonstrate mechanical integrity. The Agency has considered requiring only a percentage of wells of similar design and age within the same field to meet

this requirement. Comment is solicited on the desirability of such sampling approaches and the possibility of designing such approaches without the sacrifice of environmental protection.

c. *Area of review*—During permit review of injection wells covered by Classes I, II (with exceptions; see discussion below), and III, the permitting authority is to determine whether the proposed injection operation has a potential for contaminating underlying and overlying aquifers through other wells penetrating the injection zone. To accomplish this, States are to establish an "area of review": That radial distance from an injection well within which other active or abandoned wells must be checked.

In the initial proposal, EPA set a specific distance (2 miles for Subpart C; 1/2 mile for Subpart D) as the radius of the area of review. Commenters argued that the single measurement was unduly burdensome as well as unecessarily inflexible. It would, they contended, require the submission and study of a great many wells, their penetration, injection records, and other data with no resulting benefit.

In response to comments and on the basis of additional data, EPA now proposes to allow two alternatives to determine the radius of the area of review. The radius may be computed by use of the formula contained in proposed § 146.06 or another of equal soundness. Application of the formula would determine the actual "zone of endangering influence" for each well.

Alternatively, the area of review may be determined by the use of a fixed radial measurement not less than 1/4 mile. Such an alternative is necessary because the available formulae are not applicable in certain hydrogeologic conditions. A minimum of 1/4 mile is proposed because actual computations of the zone of endangering influence indicate that in most instances the appropriate radial distance is less than 1/4 mile.

The ¼ mile radius is a minimum only when a fixed radial measurement is used. If the area of review is calculated by the use of a formula, the permissible radius is the result of the computation even if that is less than ¼ mile.

EPA is proposing to leave the choice of method to State discretion in each case. EPA requests comments on this approach, particularly whether a specific minimum radius should be imposed, and whether a State should be authorized to vary the radius by regulation on the basis of geography and/or well-type.

d. *Corrective action*—Once the area of review is defined, the applicant must review the wells within it to determine which of them penetrate the injection zone. If available, well records do not indicate proper plugging of abandoned wells or adequate cementing around active producing wells, the applicant must propose apppropriate corrective action for the wells penetrating the injection zone as part of his permit application. The Director is to review the well records and the corrective action proposed by the applicant and determine whether additional corrective action needs to be prescribed.

Commenters objected to the potential cost of this requirement. EPA believes that the requirement, as now structured, will not prove unreasonably burdensome. The calculated zone of endangering influence should closely match the area at risk in which contamination can take place. Exempting the existing Class II wells from the requirement should reduce the number of wells that have to be reviewed in the first five years. It should also be remembered that not all wells that fall in an area of review necessarily penetrate the injection zone. Because the evolution of technology permitted drilling only to certain depths at various times in the past, whether a well penetrates beyond a given depth might, in some cases, be determinable from its age alone.

Finally, the cost of this requirement is a direct function of the number of improperly plugged or completed wells that could serve as a conduit for the migration of fluids. If the number of such wells is high, the costs, as well as the danger to underground sources of drinking water will be high as well.

e. *Requirements for injection facilities managing hazardous wastes*—The SDWA, of course, applies to all injection wells. RCRA, on the other hand, covers all treatment, storage and disposal of hazardous wastes. As a consequence, any injection facility that treats, stores or disposes of a substance identified as a hazardous waste under § 3001 of RCRA and proposed 40 CFR 250 Subpart A is subject to the requirements of both Acts.

EPA is aware that the dual coverage of injection wells under both SDWA and RCRA would complicate the administrative process by imposing distinct requirements as well as by necessitating owners or operators to secure two separate permits. To avoid this duplication and to minimize burdens on both EPA and the regulated community, EPA, through these regulations and those proposed at 40 CFR Part 122, is proposing to regulate injection of hazardous wastes under the SDWA only. EPA believes that this approach fully satisfies the requirements of both statutes by protecting against any release of these substances into the environment as well as adhering to the directive of Section 1006 of RCRA that the requirements of that statute be integrated to the maximum extent possible with those of other statutes, including the SDWA. EPA appreciates comments on its attempt to lighten administrative burdens on the regulated community while fully complying with its responsibilities under both statutes.

Specific comment is requested in this regard on Section 146.09 of this proposal. In that section, EPA is requiring owners and operators of wells at which hazardous wastes accompanied by a manifest are delivered directly to the cutoff valve at the well head to comply with the manifest system, record-keeping and reporting provisions of 40 CFR 250.43–5. By this means the agency is attempting to assure that hazardous waste injection wells, like other hazardous waste facilities, participate in the system of tracking hazardous wastes from their generation to their ultimate treatment, storage, and disposal. Comments on the legal and practical implications of this approach are solicited.

Finally, we note that, in some cases, owners and operators of hazardous waste injection wells may still have to secure permits under RCRA. These permits would not apply to, or control, injection of wastes into wells, but rather would govern the operation of surface facilities which qualify as hazardous waste management facilities, such as storage tanks or pits. In such instances, when EPA is the permit issuing authority for both the RCRA and UIC permits, it will coordinate the permit application and review process to the maximum extent possible.

2. *Subparts B–F*—These Subparts establish the technical requirements for wells in Classes I–V. As part of these requirements, Part 146 would specify minimum types and frequencies of monitoring for each class of practices. It would also establish the information the Director must consider in reviewing a permit application, for example, the existence of a contingency plan to cope with any well failures. These plans are not intended to be elaborate scenarios but rather must demonstrate that the owner/operator has anticipated possible failure and is prepared to take specific prudent steps in the face of such an eventuality. EPA specifically requests

comments on the monitoring and information requirements.

EPA particularly requests comments on one specific possible monitoring requirement: The monitoring of annular pressure by Class II wells. Annular pressure monitoring appears to be a reliable and financially reasonable test for the absence of leaks in a well. However, our data indicates that numerous Class II wells do not have enclosed annuli which are capable of being pressurized. The cost of enclosing the annulus and fitting it with valves is several thousand dollars per well or an estimated $16 million for all wells in Class II. The Agency has contemplated imposing a requirement for testing annular pressure because the high initial investment may be balanced by future savings in testing costs. EPA requests data on the cost of enclosing the annulus and the number of Class II wells that now have open annuli. In addition, EPA solicits comments on the reliability and usefulness of such tests.

Other important requirements in proposed Subparts B–F and changes from the original proposal, are highlighted below.

a. *Siting and construction requirements*—This reproposal would establish a number of construction requirements at some level of specificity. For example, the presence of adequate confining beds free of known open fractures or faults would be a consideration in the siting of both Class I and II wells. Materials used in the construciton of Class I and III wells would have to be able to withstand the corrosiveness of the injected fluids.

In addition, while the permit under the UIC program would authorize the act of injecting into a well, the regulations would also require the owner or operator of a new Class I, II, or III well to obtain prior approval for the plans to test, drill and construct the new well. The proposed requirements now specify logs to be conducted before and after setting the surface casing and the long string of casings. Tests would also be mandated to establish the characteristics of the injection formation, the injection capacity, the pressure required to fracture the injection formation, bottom hole temperature and pressure, etc.

Comments are solicited on these requirements, particularly on the level of detail and specificity of the formation testing program.

b. *Surface casing requirements*—The initial proposal required that all drinking water sources of 3,000 mg/l TDS be protected by casing cemented to the surface. Some commenters argued that that approach was economically infeasible, while others maintained that alternate casing and cementing techniques could serve equally well.

In response to these comments, EPA has modified the Subparts to allow more flexible casing and cementing programs. Casing cemented to the surface, although usually favored, need not be required if an alternate casing and cementing technique will equally suffice. Thus, an injection well may use (at a substantial cost reduction) multiple strings of casing rather than a single string to the surface in appropriate situations.

Casing and cementing requirements for Class II wells are discussed separately below.

c. *Tubing and packer*—The initial proposal permitted injections only "through tubing with a suitable packer set immediately above the injection zone." States, however, could allow alternative methods upon compelling evidence that ground water would be protected.

EPA has modified this rigid approach because in some instances (slim hole completions, for example), tubing and packer is not practical. In other cases, a fluid seal can suffice in place of packer. Consequently, the reproposed regulations apply this requirement only to Class I and allow a permit applicant to propose tubing and packer uniquely fitted to the design and function of his well. If the applicant can show that the design will prevent migration of fluids into underground drinking water sources, the reviewing authority may approve it.

d. *Annular injection*—The initial proposal prohibited three common types of annular injection: (1) Injection between the casing and hole; (2) injections (with exceptions) between strings of casing and between tubing and casing; and (3) injections between surface casing and the next innermost casing or tubing (again with exceptions).

Commenters pointed out that for some wells, surface casing alone provides the needed protection. For others, fluid migration could be prevented by testing to determine existence or non-existence of significant leaks in the well bore.

These considerations have prompted EPA to change the proposal. Injection between the hole and casing remains prohibited: this practice is inherently unsafe. Other types of annual injection would be permissible, however, if it is determined on a case-by-case basis that they would not result in the contamination of ground water. Such a determination would be made by a mechanical integrity test, unless the well design itself insures that fluid migration will not occur.

e. *Class II: Method of regulation*—Class II covers injection wells associated with the production of oil and gas. In its orginal proposal, the Agency would have required all new injection wells covered by Class II to have a permit before beginning operation. Existing disposal and enhanced recovery wells were to be repermitted within five years, during which time they could be regulated by rule.

Information now available to EPA suggests that operators of enhanced recovery and hydrocarbon storage operations have a strong economic incentive to maintain the injection wells themselves, as well as the other wells in the immediate vicinity, in good condition. Enhanced recovery operations rely on the pressure built up through the injection of fluids to force additional oil and gas to the surface through producing wells. To the extent that the pressure in the producing formation is dissipated through leaks in the injection well, fractures in the confining layers, or leaks through other wells in the vicinity, enhanced recovery becomes less cost-effective or even impossible. Similarly, the subsurface storage of hydrocarbons is practical only if a preponderant portion of the stored resource can be recovered when desired.

This inherent economic incentive reduces the need for scrutiny of these operations through an elaborate system of case-by-case permits. Thus EPA has modified the approach in this reproposal to allow for regulation of the approximately 115,000 existing enhanced recovery and hydrocarbon storage wells by rule. Such rules would, however, have to apply essentially the same requirements as the individual permits. New injection wells (estimated at 5,000 per year) would not be allowed to begin operation without a permit. Existing disposal wells (c. 40,000), because they pose the greatest threat of all wells covered by Class II, will also be regulated by permits. The Agency specifically requests comments on this proposed approach.

f. *Class II: Area of review*—The original proposal also applied the area of review requirement to all injection wells covered by Class II. Many commenters pointed out that this was possibly the most costly requirement in the regulations.

The Agency has given extensive consideration to the question of the nearby wells, i.e., the producing and abandoned wells that penetrate zones of

endangering influence associated with injection wells. EPA's contractor estimates that there may be as many as 1.8 million abandoned and producing wells. Their very number makes any requirement for review and corrective action potentially resource intensive. At the same time, the existence of this number of nearby wells that may in some way serve as conduits for the migration of contaminants from the injection zone to underground sources of drinking water cannot be ignored.

EPA examined three alternative regulatory approaches to Class II: (1) Apply the area of review requirement to all new and existing injection wells; (2) apply the area of review requirement to all new wells and existing dosposal wells; and (3) apply the area of review requirement to new injection wells only.

This proposal applies the area of review requirement only to new Class II injection wells. Of the three alternatives, this approach eliminates the greatest amount of paperwork and potential resource demand on industry and the States. At the same time, because new injection wells are normally located in existing oil fields, the review of abandoned and producing wells in the vicinity of new injection wells, will, with time, result in the review of *all* other wells. The primary gain from imposing the area of review requirement on existing as well as new injection wells would be to shorten the time in which all potentially reviewable wells are in fact reviewed.

In view of the potential cost and the substantial uncertainty surrounding the question of the extent to which nearby abandoned and producing wells in fact act as conduits for the contamination of underground sources of drinking water, EPA believes the application of the area of review concept to new injection wells only to be a responsible approach to balancing short-run costs and environmental protection.

Prudence, however, dictates that this decision be open to review. Consequently, EPA has determined that a mid-course evaluation should be conducted to reassess the need for and benefits of the area of review requirement. States are required to make a one-time report after the first year of operation on the costs and benefits of conducting reviews of nearby wells. Based on those reports, EPA may amend the requirement to broaden or reduce its coverage in the future.

The Agency welcomes specific comments on this proposed approach. Moreover, EPA solicits comment on the possibility that the imposition of this requirement on new wells only may create disincentives to the construction of new wells.

g. *Class II: Casing and cementing*—The previous proposal contained a requirement that all drinking water sources of 3,000 mg/1 of TDS be protected by casing cemented to the surface. Most commenters argued that the requirement was not economically feasible. EPA has studied this requirement further and decided that an easing of this requirement is possible and desirable. These regulations do not require Class II standards for casing and cementing to exceed what the prevailing practice has been in an existing injection field, unless there is significant risk to human health. Since oil wells in a field are usually highly concentrated, strata that have not been protected in the past are already likely to be contaminated. Extending protection to these strata is not likely to produce any tangible environmental benefits.

In any case, it is impossible in most instances to add surface casing to an existing well. Such a requirement would generally force the closure of the well. While additional cementing to prevent the migration of fluids in the well bore is possible, or best estimate of the cost of additional cementing requirements is upward of $20 billion.

EPA requests comments on this approach.

h. *Technical requirements for Class III*—Comments received on the regulations proposed in August of 1976 argued that the practices now covered under Class III are sufficiently diverse that no single set of requirements is fully applicable to all the practices, and that, in the case of some practices, e.g., the Frasch process, several of the technical requirements are unnecessary and impossibly burdensome. In particular, commenters noted that in the Frasch process time is of the essence in the replacement of wells, and, therefore, there is insufficient time to obtain the necessary prior authorization to put a new well into operation. Because of the density of wells of identical construction all injecting into the same ore body, it is urged that the requirements to determine the characteristics of the injection zone and demonstrate the mechanical integrity of each well through the tests specified in § 146.32 and § 146.08 respectively, is duplicative, burdensome and unnecessary. Furthermore, in some cases the confining bed forms a natural seal around the outside of the well casing, making the use of cement to isolate the injection zone unnecessary. The requirement for the use of materials resistant to corrosion is said to be unnecessary and extremely costly. Finally, many commenters argued that in some Class III operations it is unnecessary to monitor the displacement of fluids from the injection zone because there are no lateral connections to underground sources of drinking water.

This reproposal does respond to some of these comments. For example, the present classification of wells does make the applicability of the requirements more consistent than the scheme in the earlier proposal. Additional flexibility has been granted the Director in specifying construction and formation testing requirements for Class III. Comments are solicited in this preamble on possible ways of easing the mechanical integrity requirement. Finally, the area permit is intended to reduce the burdens of obtaining individual permits for new wells.

At the same time, the Agency concluded that other suggested changes should not be adopted without further information on potential environmental consequences and opportunity for public comment.

EPA is continuing to evaluate alternatives for fashioning Class III requirements. One possible approach would be to subdivide Class III so that consistent requirements could be established for each subclass. Such subdivision could be based on the type of practice (e.g. Frasch process, salt mining, geothermal wells, etc.), the depth of injection, the life expectancy of the well, or the relationship of the injection zone to underground sources of drinking water.

Another alternative would be to retain the form of this reproposal but to ease or eliminate certain requirements for specific practices. Such eased requirements might include relieving the operators of Frasch projects of the responsibility to obtain the Director's approval prior to constructing or operating new wells, to require monitoring in the injection zone only in cases where a hydraulic connection to an underground source of drinking water exists, to remove the requirement for the use of corrosion resistant materials, to require formation testing only for the project and not each well, and to provide more flexibility (for example, allowing a natural seal as an alternative to cementing) in the requirement to demonstrate mechanical integrity.

The Agency solicits data on the difficulties the reproposed requirements would pose for Class III wells, and comments on the present approach in the regulations as well as the alternative approaches discussed here.

i. *Abandonment requirements for Class III*—Several types of Class III operations, notably the solution mining of uranium, are normally conducted in shallow aquifers. While the water in the immediate vicinity of the ore body is not or should not be used for human consumption, hydraulically connected portions of the same aquifer can and do serve as acceptable sources of drinking water. Because of the use of solvents and other chemicals, water in the mining area is often degraded from its original quality. Fluids can migrate from the injection site and, thereby, contaminate hydraulically connected portions of the aquifer which may be underground sources of drinking water.

The Agency has considered establishing requirements designed to protect underground sources of drinking water in such situations. One alternative would be to require the restoration of the injection site. Information available to the Agency, however, indicates that restoration technology is costly and experimental with uncertain results. Another possibility would be to require the containment of fluids within the injection zone. This requirement seems technically feasible. However, it may be necessary to contain the fluids for an indefinite period into the future which would not be administratively feasible.

The Agency solicits comments on the extent of this problem and on the technical and economic aspects of possible ways of protecting underground sources of drinking water from migration from Class III injection sites.

j. *Regulatory approach to Classes IV and V*—In the current proposal, Classes IV and V cover all wells not covered under Classes I–III, including wells that inject into or above underground sources of drinking water. This group includes industrial and municipal waste disposal wells, dry wells, non-residential septic system wells, drainage wells, cooling water return flow wells, salt water intrusion barrier wells and subsidence control wells. These practices were previously covered under Subparts C and E of the August 31, 1976, proposal.

Developing a viable regulatory approach for these two classes offers some special challenges. "Conventional" disposal and oil and gas related wells are designed to inject into confined strata. Contamination is normally a function of leaks or the movement of fluids from the injection zone through natural or man-made conduits, and can, therefore, be controlled through the application of sound engineering practices to siting, construction and operation. The practices now grouped under Classes IV and V, however, are different: because many of them inject into or above drinking water sources, they may cause contamination even if designed and operated in accord with the strictest engineering practices.

Orginally EPA proposed to bring these practices under control through a system of permits. Information now available to the Agency raises questions about the appropriateness of such a regulatory approach. *First*, Class IV and V wells may continue to endanger regardless of the construction and operating requirements imposed and may, therefore, not be "permittable" at all. *Second*, according to the best information available to EPA (Geraghty and Miller, Inc. and Temple, Barker and Sloane, Inc., "Analysis of Costs: Underground Injection Control Regulations, Class IV and V Wells" there may be in excess of 250,000 wells that fall into this category nationwide. Permitting such a great number of wells would be highly resource intensive. *Third*, little is known either about the extent of environmental damage caused by these wells or about the consequences of bringing them under regulation. In fact, in some places, such practices are carried out intentionally (e.g. aquifer recharge) or tolerated as the most environmentally feasible method for disposing of fluids (e.g., storm water drainage). *Finally*, while the total volumn of fluids injected into such wells is large (estimated at upwards of 50 billion gallons per year), the injection into a particular well may be intermittent and the toxicity of the injected fluids highly variable.

EPA considered several alternative regulatory approaches to these wells: (1) A permit program as outlined in the earlier proposal; (2) a national assessment independent of the UIC regulations; (3) a three-year assessment within the framework of the regulations leading to State plans; and (4) an assessment within the framework of the regulations coupled with regulatory control over certain of these practices.

Even though a great deal is unknown about these practices, available evidence suggests that the fourth option is most appropriate. Such wells may represent the most immediate and most serious environmental problem of all the practices covered by these proposed regulations. Consequently, bringing at least the potentially most endangering practices under regulatory control now is justified.

Under this proposal, wells under the control of hazardous waste generators or management facilities (as defined in RCRA) which inject into or above underground sources of drinking water are defined as Class IV wells.

Class IV wells are to be inventoried through the notification system under the RCRA hazardous waste management program. The States are required to formulate enforcement strategies that would result in the closure of these wells within three years of the effective date of the program. New Class IV wells would be prohibited.

All wells not covered under Classes I–IV fall under Class V. Owners or operators of such wells are required to notify the State within six months of the effective date of the UIC program. Within two years of that date, the State shall complete and submit to EPA an assessment of the contamination potential of Class V wells, an assessment of the regulatory alternatives for these wells, and recommendations for Federal regulatory action. Based on the State reports, EPA will fashion further national requirements. States may begin the assessment of Class V wells as part of the development of approvable State UIC programs. Such activity is a cost-eligible item under the program grant.

EPA has considered longer time-frames for the assessment. However, given the potential problem posed by these wells, two years appear to be realistic. Comments are requested regarding the feasibility of completing the assessment in this time.

A second important requirement for Class V is that if the Director, at any time, gains knowledge of a well which poses a significant risk to human health, the Director shall immediately prescribe such action as necessary to remove such risk. This may include closing the well. The Agency gave considerable thought to the formulation of this requirement. While it is EPA's conclusion that insufficient information is now available to bring all or a large portion of the practices covered under Class V under regulatory control, it is also apparent that some Class V wells do represent a problem for human health and the environment. The intent of this requirement is to set a protective criterion for immediate action to deal with Class V wells that constitute a problem. At the same time, EPA sought to avoid drawing the criterion so broadly as to include virtually any Class V well. Such a broad criterion would have contradicted the Agency's judgment that the regulatory control of Class V is, at this time, premature. After consideration of several alternatives, the Agency chose the criterion, "significant risk to the health of

persons," to provide the Director with the flexibility to take immediate action when necessary without forcing him to undertake the control of all Class V wells at the time.

EPA believes the approach described above to be a reasonable course of action. *First,* Class IV wells appear, by their very nature to pose a threat to underground sources of drinking water. Their speedy termination seems justified on environmental grounds. *Second,* the approach chosen here links Class IV with the RCRA hazardous waste management program, thereby fostering a coordinated environmental attack on the disposal of hazardous wastes. Linking Class IV at least in part with the hazardous waste management program would help to avoid duplicative administrative requirements and, thereby, would ease the administrative burden on States and at least some operators.

EPA recognizes that there may be some instances where Class IV wells do not necessarily pose a threat to underground sources of drinking water. We request examples of such instances (if any), comments on the desirability of exempting such wells from the requirements of Class IV, and suggestions on how such an exemption, if necessary, could be forged.

The assessment mandated for Class V wells represents solely the recognition that insufficient information is available to the agency at this time. EPA has every intention of continuing to seek the necessary environmental and economic data and establishing appropriate national regulatory requirements in the future.

Comments on the approach adopted for Classes IV and V is, as on all parts of this proposal, solicited.

Economic Impact

Most States already regulate the underground injection of fluids in some manner or to some degree. State personnel are already assigned to work on the control of injection wells, and owners and operators of injection wells are already forced to take some level of action in response to existing State requirements. Nevertheless, the UIC regulations will cause both States and industry to commit resources to the protection of underground sources of drinking water in addition to their current level of effort.

EPA's best estimate is that these regulations will result in incremental costs of approximately $808 million to all 57 States and Territories and the regulated community in the first five years of program operation (Table 1 provides a summary).This estimate includes costs only for developing and conducting the assessment of Class V wells and does not try to guess the impact of immediate closures or the eventual regulatory requirements. In addition, no attempt was made to anticipate the changed requirements that may result from the mid-course evaluation of the area of review requirement.

Table 1.— *Summary of Five-Year Incremental Costs of UIC Regulation*[1]

[In thousands of 1977 dollars]

	Non-recurring	Recurring	Total
Industry:			
Class I	2,300	[illegible]	2,590
Class II	642,770	[2]3,820	[2]646,590
Class III	2,851	[illegible]	3,371
Class IV	6,000	114,000	120,000
Subtotal	653,921	118,630	772,551
State:			
Class I	870	4,075	4,945
Class II	12,097	[2]6,491	[2]18,588
Class III	509	1,150	1,659
Class IV	2,900		[illegible]
Class V	7,200		7,200
Subtotal	23,576	11,716	35,292
Total	667,497	130,346	[illegible]

[1] Numbers show maximum of ranges for all but Class II wells.
[2] Includes reporting costs for hydrocarbon storage wells.

It should be emphasized that the estimate is largely a function of the size of the environmental problem. The cost of carrying out the fixed requirements—permit application, permit issuance, inspection, surveillance, monitoring, testing, reporting, etc.—is estimated to be $207 million in the first five years, or $41 million annually. This is, in a sense, the fixed cost of the regulations. The remainder, $601 million, is the estimated cost, in the first five years, of repairing leaky injection wells, re-plugging wells improperly abandoned in the first place, and re-cementing improperly completed producing wells in the areas of review. For Class IV, these costs include the pretreatment of hazardous waste, the construction of environmentally acceptable alternative disposal wells, and the hauling of hazardous wastes to approved hazardous waste management facilities. This is a variable cost which directly depends upon the number of problem wells. If the environmental problem is more or less extensive than assumed for the purposes of this analysis, this portion of the cost would vary accordingly and potentially widely.

Of the total $808 million estimated cost, about $773 million falls on industry. The studies that support these estimates were aimed primarily at estimating total national costs. Economic impacts were addressed only indirectly. In view of the costs imposed, however, no measurable impact is projected for the industries regulated under Class III. Similarly, despite the large absolute costs imposed on Class II operations in the aggregate, no significant impacts are expected since the costs imposed are small relative to the economic potential of the oil and gas industry.

Commenters on the previous proposal argued that the regulations would place undue burdens on small oil and gas producers, and would, in fact, force many of them to close down. In view of the adjustments EPA has made in the requirements of this reproposal, EPA's initial analysis does not indicate a significant impact in this regard. The Agency requests data on the impact of these regulations on small oil and gas producers. In addition, we solicit comments on whether some form of an exemption for small producers from these requirements would be desirable, and on how such an exemption might be formulated.

The total incremental State burden is estimated to be about $35 million over five years or about $7 million annually. EPA is authorized to award grants to States to support UIC program development and operation. $6.0 million is available in fiscal year 1979 and $7.6 million in fiscal year 1980.

The cost of regulating oil and gas related injection wells, $665 million over five years, clearly dominates both State and industry costs. However, this Class also has the largest number of wells (2 million) potentially affected by the regulations. The following discussion provides details of the cost estimates by Class of Well. The sections are organized into industry estimates and State estimates. They also discuss non-recurring and recurring costs. Non-recurring costs include such one-time activities as inventorying wells in the area of review, taking appropriate remedial action, and repermitting existing wells. Demonstrations of mechanical integrity are also treated as one-time costs because the second round of tests will not take place in the first five-year period. Recurring costs include such periodically required activities as monitoring, reporting, and enforcement.

Class I wells

1. *Industry Costs*—A demonstration of mechanical integrity will be required of operators but flexibility is provided in the tests for demonstrating it. Unit costs can range from $5,000 to $35,000 per test. The total cost of mechanical integrity testing is estimated to be in the range of $300,000 to $2.1 million.

Appropriate remedial work is prescribed for defective wells and may vary from $15,000 to $100,000 to repair a severely damaged well. Total incremental repair costs for the class are estimated to range from $35,000 to $200,000. No costs have been included in the estimates for plugging abandoned wells because indications are that all abandoned wells near existing Class I wells are already properly plugged.

The average number of new wells being constructed each year is estimated at twenty. Since all States now have permitting requirements at least as stringent as the UIC requirements, new construction will incorporate the new design criteria contained in these regulations and no incremental construction costs are expected to result.

Incremental recurring costs will be incurred by operators of municipal and industrial injection wells located in States other than Texas, Louisiana and Michigan, which already have reporting requirements that meet or exceed those proposed here. Additional reporting requirements in other States have been estimated to cost $300 per well for 125–170 new and existing deep disposal wells, and $3,000 for nuclear disposal wells. Total recurring costs are estimated to range from $48,000 to $58,000 per year.

2. *State Costs.*—The regulations require collection and review of data on a quarterly basis for each site subject to the regulations. One work day per submission per site has been assigned as the cost accounting standard. The submission of reports to EPA will require 40 to 60 work days per State.

The total costs of the requirements in Class I appear in Table 2.

Class II Wells

Class II wells include injection wells associated with oil and gas production and hydrocarbon storage. The conceptual scheme for estimating incremental costs involves the identification of unit costs for the activities required by the proposed regulations and multiplying those by the estimated numbers of wells requiring each kind of action.

1. *Industry Costs.*—Incremental non-recurring costs of compliance to operators are estimated to be $647 million over the first five year period. Of this total $20 million is for the preparation of permit applications, and $136 million is the cost associated with determining the nature and extent of necessary corrective action. The bulk of these costs, $487 million, is the estimated cost of the corrective work itself.

In estimating the cost of corrective action the unit cost of reabandoning a well was taken as $20,000. However data recently obtained suggests that this may be a conservative figure. EPA is particularly interested in obtaining data during the public comment period which will enable it to assess the appropriateness of the unit cost figure.

On the average, industry will experience one-time costs of some $129 million per year over a five-year period. These estimates assume the current requirements for Class II and do not try to anticipate the outcome of the mid-course evaluation regarding the area of review requirement.

In addition to the one-time costs associated with existing wells, there are incremental costs which producers will incur each year to collect and report monitoring data. The total recurring costs attributable to the regulation are estimated at $3.8 million over five years or about $760,000 annually. Table 3 provides additional detail on these costs.

Table 2.—*Incremental Five-Year Program Costs—Class I Wells*

[In thousands of 1977 dollars]

	Non-recurring	Recurring	Total
Industry:			
Mechanical Integrity Test	300–2,100	.....	300–2,100
Remedial Action	35–200	.....	35–200
Monitoring and Reporting	.....	240–290	240–290
Subtotal	335–2,300	240–290	575–2,590
State:			
Permit Existing Wells	240–480	.....	240–480
Hearings	100	.....	100
Program Development	160–290	.....	160–290
Quarterly Review	.....	730	730
Annual Report	.....	115–470	115–470
Enforcement	.....	1,500–2,875	1,500–2,875
Subtotal	500–870	2,345–4,075	2,845–4,945
Total	835–3,170	2,585–4,365	3,420–7,535

Table 3.—Incremental Five-Year Costs to Producers, Class II Wells.

[thousands of 1977 dollars]

Non-recurring:	
Evaluation of Construction:	
Abandoned Wells	12,600
Producing Wells	28,200
Injection Wells	95,560
Corrective Action:	
Abandoned Wells	302,800
Producing Wells	95,400
Injection Wells	118,310
Permit Application	19,900
Subtotal	642,770
Recurring: [1] Monitoring and Reporting	3,820
Total	646,590

[1] Includes costs for reporting for hydrocarbon storage wells.

2. *State Costs*—The estimate of the incremental cost to States of implementing the proposed UIC control program for Class II is based on an estimate of the total effort that will be required in oil-producing States to enforce the proposed Federal regulations. The amount currently spent on UIC programs by these States was then subtracted from the total, yielding the incremental costs.

It is estimated that oil-producing States will incur total costs of $39.3 million over a five year period. Of this, $12.1 million will be one-time cost to repermit existing disposal wells and other start-up costs. The remaining $27 million will cover the permitting of new wells, monitoring and enforcement and general overhead. Since current State spending projected for five years equals $20.7 million, incremental costs over five years are $18.6 million or $3.7 million annually.

These estimates do not include Wyoming because it did not provide data on well population during the survey. Since Wyoming is a major

producer, the cost to States will be somewhat greater than those presented here. These costs are summarized in Table 4.

Table 4.—Incremental Five-Year Costs to States, Class II Wells.

[Thousands of 1977 dollars]

Non-recurring:	
Ground Water Inventory	2,200
Permit Existing Disposal Wells	7,825
Other	2,072
Subtotal	12,097
Recurring:	
Overhead	5,590
Permit New Wells	5,010
Monitoring and Enforcement, all Other	16,631
Subtotal	27,231
Less Current State Spending	−20,740
Subtotal, Incremental Recurring Costs	6,491
Total State Cost	39,310
Total Incremental State Cost	18,588

Class III Wells

Special process mining is, in most instances, a developing technology already operating under relatively strict controls. There are about 2,000 wells but a relatively small number of sites at the present time. Consequently, the costs of compliance are estimated to be small and the impact on the industry to be negligible. The prevalence of these practices may, however, increase in the future.

1. *Industry Costs*—The total incremental cost to industry of complying with Class III requirements is estimated to be between $2.1 and $3.4 million for the first five years, or about $400,000 to $700,000 annually. Of this, about $1.7–2.9 million are non-recurring costs mainly associated with tests for mechanical integrity and repair of faulty wells. The remaining $400,000–$520,000 are the costs of monitoring and reporting.

Several types of Class III operations are not estimated to carry any additional cost burden either because of a lack of information or because the operations are experimental processes under apparently strict Federal or State control. Types of wells which are assumed to have incremental costs due to these regulations are discussed briefly.

The States of Texas and Louisiana account for all current *Frasch process* sulfur mining. There are 10 mine fields with approximately 500 wells in the two States. The average useful life of a Frasch well is about one year. Since this practice was started 80 years ago, approximately 35,000 wells have been drilled.

The present application requirements for Frasch process wells will involve expenses ranging from $1,700 to $4,000 per site depending upon the information required by the State Director. The total one-time permitting expenses for the ten fields will be approximately $24,000. No incremental costs are assumed for mechanical integrity testing. Construction and maintenance of monitoring wells and monitoring activities are estimated to cost from zero to $13,000 per site additional. The total incremental cost for monitoring ranges from zero to $60,000 annually, or zero to $300,000 over five years. The incremental costs of reporting are estimated to be about $7,000 annually, or $35,000 over five years.

There are fifty operating *salt solution mining* sites in the U.S., principally in Texas, Louisiana, Michigan, New York, Ohio, and Kansas. These sites contain approximately 500 wells, each well having an average useful life of seven years.

Permit application expenses for the fifty fields vary from $85,000–$170,000, and incremental annual reporting requirement expenses are estimated at $16,000 for each site which is not currently generating the information. The total one-time cost of mechanical integrity testing will vary from $1.5 million to $2.5 million.

One operating field with 18 wells (17 injection and one extraction) for the *solution mining of potash* exists in Moab, Utah. The company which operates the Utah site is exploring other sites near the western Canadian border.

Permit application requirements for the one site will involve a one-time cost of $20,000–$30,000. Mechanical integrity testing of the injection wells will cost $2,000 to $5,000 per well. All abandoned wells in the field are thought to be adequately plugged so that no cost would be incurred by the operator for reviewing nearby wells. Recurring incremental costs for reporting and monitoring will amount to $20,000 per year, or $100,000 over five years.

Summaries of the one-time costs and annual recurring costs to industry are presented in Table 5.

Table 5.—*Incremental Five-Year Costs to Industry, Class III*

[In thousands of 1977 dollars]

	Permitting	Mechanical integrity test	Total
Non-recurring:			
In-Situ Gasification	0	0	0
Uranium Leaching	0	0	0
Geothermal	0	0	0
In-Situ Copper Leaching	42	0	42
Frasch Sulfur Mining	24	0	24
Solution Mining of Salt	85–170	1,500–2,500	1,585–2,670
Solution Mining of Potash	20–30	34–85	54–115
Subtotal	171–266	1,534–2,585	1,705–2,851

	Monitoring	Reporting	Total
Recurring:			
In-Situ Gasification	0	0	0
Uranium Leaching	0	0	0
Geothermal	0	0	0
In-Situ Copper Leaching	170	15	185
Frasch Sulfur Mining	300	35	335
Solution Mining of Salt	0	80	80
Solution Mining of Potash	50	50	100
Subtotal	520–620	180	400–520
Total	N/A	N/A	2,105–3,371

Table 6.—*Incremental Five-Year Costs to States, Class III Wells*

[In thousands of 1977 dollars]

	Total
Non-recurring:	
Permitting Existing Sites	165–360
Hearings	54
Developing State Programs	80–95
Subtotal	264–509
Recurring:	
Quarterly Review	195
Annual Report	35–130
Enforcement	425–825
Subtotal	655–1,150
Total	919–1,659

2. *State Costs.*—The regulations require collection and review of data on a quarterly basis for each site subject to the regulations. One work day per submission per site has been assigned as the cost accounting standard. The submission of an annual report to EPA will require 40 to 60 work days per State to comply with the regulations.

The State program costs for all States to comply with this Subpart of the regulations are estimated to be $919,000 to $1,659,000 over five years as shown in Table 6.

Class IV Wells

Preliminary analysis, based on limited field work, suggests that there are between 5,000–10,000 wells that will meet the definition of Class IV. The "best estimate" is 7,500 wells.

Depending on the volume of wastes to be disposed of, the owner or operator of a Class IV well is expected to choose one of three alternatives when the well is closed: (1) Pretreating the waste and disposing to a municipal treatment system; (2) constructing a Class I disposal well; or (3) hauling the hazardous waste to an approved hazardous waste management facility.

Field experience indicates that as the cost of disposal increases, facilities either separate their hazardous and non-hazardous waste streams, or reduce their total waste stream. This analysis, therefore, assumes a sharp reduction in the volume of the current hazardous waste stream now generated by these facilities.

The analysis assumes that the ultimate full cost of disposing the wastes associated with Class IV range from $20 million to $80 million per year, with the "best estimate" being about $40 million each year. This cost, however, will not be reached until the forth year of program operation: In the first three years costs incurred by industry will increase as additional wells are closed down.

It is expected that the cost to industry in the first five years of program operation will total $120 million. State costs are estimated at $2.9 million over this period.

Class V Wells

Non-recurring State costs for Class V wells are related to establishing the assessment program while annual costs relate to compiling, categorizing and analyzing the information collected. It is estimated that this effort will cost $5.2–$7.2 million over a five year period.

It is almost impossible to estimate the cost or impact of the requirement to prescribe immediate corrective actions for Class V wells which pose a significant risk to human health. We cannot anticipate the number of such wells or the nature of the steps the Director may prescribe.

EPA solicits data on all costs and economic impacts resulting from these regulations.

Reporting Impacts

Reporting requirements established in these regulations, as well as in the related sections of 40 CFR Parts 122 and 123, for the UIC program are estimated to cost about $3.1 million per year to producers, operators, EPA and the States.

Reporting requirements apply to all permit holders under Classes I, II, and III, and to owners or operators of wells authorized by rule under Classes II and IV. Owners or operators of Class II wells are to report once each year. Owners or operators of all other wells must report quarterly. Total annual costs to producers and operators are estimated to be $1.7 million.

The State must review these reports. It must, in turn, make three types of reports to EPA: (1) Semi-annual reports while it is developing its application for primary enforcement responsibility; (2) quarterly reports on the compliance status of major facilities (Classes I and IV) once the State program is effective; and (3) annual reports on the operation of its program. States will also have to conduct and report on a special mid-course evaluation. State costs are estimated to be about $1.4 million per year.

EPA will have to review the periodic and special reports from the 57 States jurisdictions. The reviews should cost about $33,000 per year.

	Classes			
	I	II	III	IV
Well Owner/Operator:				
Number	[illegible]300	25,000	93	7,500
Frequency (annual)	4	1	4	4
Unit time (hours)	5–16	1	5–16	8
Unit cost (dollars)	75–150	15	80–175	40
Total cost ($ thousands)	43–53	410	28	1,200
State:				
Review Reports:				
Number	1,440	25,000	372	[illegible]15,000
Unit time (hours)	8	1	7	1
Unit cost (dollars)	115	15	105	15
Total cost ($ thousands)	165	504	39	221
Special Report: [illegible]				
Total cost ($ thousands)	19	51	6	[illegible]
Quarterly Report:				
Number	100			[illegible]
Unit time (hours)	13			40
Unit cost (dollars)	200			585
Total cost (thousands)	20			134

	Classes			
	I	II	III	IV
Annual Report:				
Number	[illegible]	32	16	[illegible]
Unit time (hours)	50–235	160	80–108	160
Unit cost (dollars)	720–3,560	1,600	440–1,625	2,350
Total cost ($ thousands)	[illegible]	51	7–26	[illegible]
EPA Review:				
Respondents	25	32	16	57
Frequency	[illegible]	5	5	5
Unit time (hours)	[illegible]	8	4	4
Unit cost (dollars)	40	60	[illegible]	[illegible]
Total cost ($ thousands)	5	13	3	12

[1] Average number of wells over five years.
[2] Only two reports will be submitted in the first year.
[3] One-time costs in connection with application for primacy.

Evaluation Plan

The UIC program will be evaluated in three ways. *First,* quarterly and annual reporting is required both of the owners and operators of wells and the States with primary enforcement responsibility for the program. This periodic reporting will allow the periodic assessment of the efficiency of the program in terms of whether the permits are being issued on schedule, what the rates of permit violations are and whether the rates are increasing or decreasing, and whether State programs are performing adequately as measured by the conditions of State primacy.

Second, a mid-course evaluation of the requirement for corrective action in the area of review has been scheduled after the first full year of program operations. This assessment will evaluate one of the central requirements of the regulatory approach. It will provide information on the potential environmental problem posed by abandoned and producing wells that penetrate the zone of endangering influence associated with injection wells. It will also yield information on the costs and benefits of corrective action and analyze alternatives to the current requirement.

Finally, a full evaluation will be undertaken at the end of the fourth year of program operation to assess whether the UIC Program is achieving its intended objective of protecting underground sources of drinking water from well injection. A number of elements have been built into the program, for example, monitoring in the case of new wells to establish backgound water quality in the proposed injection formation and effective State programs to respond to public complaints, which will permit a comparison of ground water quality in at least selected aquifers before and after the UIC program will have become operational.

The development of a detailed evaluation plan has been initiated. A final plan will be available at the time these regulations are promulgated.

Public Participation

Interested parties are encouraged to participate in this rulemaking by submitting written comments to the Comment Clerk at the address given in the introduction to this preamble. Comments are invited on all issues raised in the reproposed regulations, this preamble, and the documents referenced in the preamble. Comments are also invited on all aspects of EPA's initial designation of States. All relevant comments received no later than August 20, 1979, will be considered.

Comments are also solicited on any other provisions of the Act (including the 1977 Amendments) relating to UIC which may not have been raised in today's Federal Register. Comments and the following supporting documents will be available for public inspection and copying at a reasonable fee during normal business hours at the Environmental Protection Agency, Public Information Reference Unit, Room 2922, 401 M Street, SW., Washington, D.C. 20460. Copies of the supporting documents will also be available for inspection and copying in the Library at the ten EPA Regional Offices.

The supporting documents are:

1. "Statement of Basis and Purpose for the Underground Injection Control Program Regulations."

2. "Analysis of Costs Underground Injection Control Regulations, Class I and Class III."

3. "Methods and Costs for Inventory and Assessment of Injection Wells Covered Under Classes IV and V."

4. "Estimated Cost of Compliance, Proposed Underground Injection Control Program Regulations, Class II Wells."

5. "Draft Environmental Impact Statement—State Underground Injection Control Program, Proposed Regulation."

6. "Supplement to Draft EIS, Reproposed Regulations."

7. "A Guide to the Underground Injection control Program."

EPA will propose to consolidate its regulations covering the procedures for certain permit programs. Proposed regulations will appear soon in the Federal Register as revisions to existing 40 CFR Parts 122, 123 and 124 and will cover the Underground Injection Control, Hazardous Waste Management and National Pollutant Discharge Elimination System (NPDES) Permit Programs. This will include regulations to implement Section 3006 of the Resource Conservation and Recovery Act (RCRA). To facilitate review of the UIC specific regulations in light of the proposed consolidation, EPA will hold informal joint hearings on the consolidated regulations and Part 146 in Dallas, Chicago, Seattle and Washington, D.C. beginning in July of this year.

The specific times and places of these public hearings will be announced in the Federal Register in the near future.

(Secs. 1421, 1422, 1423, 1447, and 1450 of the Safe Drinking Water Act, as amended (42 U.S.C. 300–h *et. seq.*).)

Dated: April 2, 1979.

Douglas M. Costle,
Administrator.

Appendix A—Response to Public Comments

Proposed State Underground Injection Control (UIC) Program Regulations were published for comment on August 31, 1976, 40 CFR Part 146. Written comments on the proposed regulations were invited, and public hearings were held in Dallas, Texas; Denver, Colorado; and Washington, D.C. Four hundred twenty-nine written submissions were received, totaling several thousand pages.

Since that time, EPA has decided to consolidate certain UIC requirements with other EPA permit programs and, as explained in the Preamble, intends to propose them as part of 40 CFR Parts 122, 123 and 124 in the near future. However, since these requirements were originally included in the 1976 proposal of Part 146, and since all of them together constitute the minimum requirements for the UIC program, the

EPA responses to all comments are summarized here for the sake of clarity.

Definitions and Coverage

Underground Sources of Drinking Water. The 1976 proposal defined "underground sources of drinking water" as an aquifer already in use or an aquifer containing water with fewer than 10,000 mg/1 of TDS. A vast majority of commenters were opposed to the total dissolved solid limit of 10,000 mg/1 or less that would qualify an aquifer as an underground drinking water source to be protected by proper well construction. They felt that a figure of from 2,000 mg/1 to 5,000 mg/1 of TDS would be much more realistic. Many commenters also felt that the State should play a larger role in the determination of what constitutes underground drinking water sources.

The revised regulations have been reworded in the light of the comments to allow States additional flexibility. A section has been added in Part 146 allowing underground sources of drinking water to be designated by the State (or EPA if it has primacy) after public hearings and with EPA approval.

However, in view of the specific discussion on this point in the committee report (House Report 93–1185, p. 32) that accompained the Safe Drinking Water Act (SDWA), the Agency does not believe that it has the authority to depart from the 10,000 mg/1 of TDS standard. This decision is discussed at length in the body of the Preamble.

Endangerment. The 1976 proposal offered a definition of "endangerment" that expanded on the definition stated in § 1421(d)(2) of the Act. Several conflicting comments were received on this point. Some commenters felt that the definition was not protective enough of drinking water sources. Some felt there were too many ambiguities in the definition, rendering it unclear and diminishing its service as a guideline. Other commenters wanted extensive modification of the definition or wanted the definition of "endangerment" to revert to the one in the Act.

EPA agrees that the proposed definition was unduly vague and confusing, and has decided that since "endangerment" is defined in the Act, it need not be redefined in these regulations.

Instead of a formal definition, EPA now proposes to use an operational test: Whether an injection operation will cause the migration of injection or formation fluids into an underground source of drinking water. This change is discussed further in the Preamble.

Well Injection. The original proposal solicited comments on a definition of "well injection" which included dug wells. Under that definition, EPA proposed to bring surface impoundments (pits, ponds, and lagoons) under the coverage of the UIC regulations and would have required an inventory and assessment of these practices within 18 months after the approval of a State program.

Several commenters questioned EPA's legal authority to extend its regulatory activity to pits, ponds, and lagoons, under the term "dug well." Nine commenters felt that the inventory and assessment prescribed under the August 31, 1976 draft of the regulations would place an undue burden on State agencies and would ultimately impede State efforts to attain primary enforcement authority. Conversely, four commenters stated that such waste retention facilities should be controlled by the proposed regulations.

EPA has considered these comments and reached the conclusion that an assessment of pits, ponds, and lagoons within the framework of the UIC regulations may not be the most desirable approach to such practices at this time. The exclusion of surface impoundments narrows the application of "dug wells" to situations where the depth of the facility is greater than the largest surface dimension.

An assessment of surface impoundments has been undertaken through a separate EPA grant independently of the UIC program. It is also the Agency's current intention to cover surface impoundments under the solid waste disposal and hazardous waste management programs mandated by the Resource Conservation and Recovery Act.

Well Groupings. The 1976 proposal divided wells into three categories and offered differing requirements for each category. *Subpart C* included "underground injection by industrial and municipal waste disposal wells, subsidence control wells, barrier wells, recharge wells, mining wells, storage wells and geothermal wells." *Subpart D* included produced fluid disposal wells and secondary and tertiary recovery wells related to oil and gas production. *Subpart E* included drainage wells such as those used to dispose of "storm water runoff, irrigation return flow, and excess ponded surface waters."

More than one hundred comments were received which questioned whether the regulations were flexible enough to provide effective guidelines for the many different types of underground injection operations which were grouped under Subpart C.

EPA has recognized the unique requirements of different wells. Wells have now been classified into five classes, each with differing regulatory requirements. Certain well types have also been shifted among categories. This revised classification scheme will now more effectively provide for the specific requirements of each different type of injection and will be consistent with the goal of optimum protection of underground drinking water sources. Changes are more specifically addressed in response to the following six groups of comments.

1. Ninety-four comments were received which objected to the inclusion of mining and geothermal wells in Subpart C. They stated that the inclusion of these two types well in Subpart C would either seriously hinder or expressly prohibit some essential facets of underground solution mining and energy production.

EPA has considered the operational requirements specific to each industrial application and concurs that these types of injection should be moved from Subpart C to Class III of these regulations. The requirements of Class III will allow the State Director much more flexibility to provide for these unique injection practices, while continuing to afford maximum protection to drinking water sources.

2. Concern was expressed by numerous commenters that gas storage wells should not be included under Subpart C. They noted that these wells should be included under Subpart D. One commenter suggested that gas storage wells should be excluded from these regulations entirely.

Gas storage well operations fit the definition of "underground injection," as discussed in House Report 93–1185, which notes specifically that the definition of underground injection "is not limited to the injection of wastes or to injection for disposal purposes." Therefore, EPA concluded that hydrocarbon strorage wells should be covered in the regulations, but should appropriately be moved to Class II with the other injection activities asociated with the production of oil and gas.

3. Fourteen commenters maintained that subsidence control wells, barrier wells, and recharge wells were "over-regulated," due to their inclusion in Subpart C of the regulations.

EPA reviewed the comments and agrees. These types of wells have been transferred to Class V. Class V wells are required to be inventoried and their potential for contaminating underground

sources of drinking water to be assessed within three years. Based on the assessments and State recommendations, EPA intends to fashion further regulatory requirements in the future.

4. Six commenters suggested that septic tanks and nuclear waste disposal wells not be regulated in Subpart C. Multifamily, commercial, and industrial septic system disposal wells are now included in Class V in accordance with the intent of Congress, as stated in the House Report 93–1185 (p. 31). Nuclear waste disposal and storage wells are included in Class I because of the need for more stringent control.

5. Several commenters questioned EPA's authority to regulate "gravity driven" drainage wells and others suggested that the proposed regulations for drainage wells were not specific enough to provide guidelines for the control of the different types of injection which would be included in this category. House Report 93–1185 states that "the definition of underground injection is intended to be broad enough to cover any contaminant which may be put below ground level * * * whether semisolid, liquid, sludge, or any other form or state," and that the intent of Congress is to provide regulations for any well "whose principal function is the subsurface emplacement of fluids." Therefore, EPA continues to include drainage wells as a regulated practice, particularly since such "gravity driven" drainage may go directly into drinking water sources.

Drainage wells now fall either into Class IV if they are owned or operated by generators of hazardous wastes or hazardous waste management facilities, or into Class V.

6. One commenter suggested that the subsurface disposal of mill wastes (tailings) be specifically exempted from the regulations. Conversely, two suggested that seismic "shot holes," mineral exploration test wells, and cathodic protection wells be included.

EPA is guided by the intent of Congress, as stated in Section 1421(d) of the SDWA, that "underground injection means the subsurface emplacement of fluids by well injection." Therefore, only wells whose primary function is the emplacement of fluids would be subject to these regulations. Consequently, the subsurface disposal of mill tailings has been retained in the regulations. The other three categories are not included.

States to be included in the program. Twenty-six comments were received concerning § 146.1(b) of the proposed regulations, which provided that the Administrator list in the Federal Register each State for which a State UIC program may be necessary to assume protection of underground drinking water sources.

The majority of these comments questioned what defines a State as "needing" a UIC program. One commenter maintained that the intent of Congress was that all States have a UIC regulatory program. Two other commenters recommended that only those States be included for which a study of "essentiality" indicated a need. Twenty-one commenters from seven States asked that specific States be excluded from the list of those needing a program, because they felt that existing State programs adequately protected their drinking water sources.

It is the intent of Congress that all States eventually be included in the UIC program. Some States, however, have a greater need for such a protective program. Therefore, EPA has published an initial list of 22 States and intends to list additional States "from time to time" in the future.

The determination of the "need" for an underground injection program (and a State's listing in the Federal Register) is not based on criteria such as the quality or adequacy of existing State programs. Rather, "need" is established by criteria such as the number of people in a State dependent on underground sources of drinking water, and the number of injection wells in the State.

A list of 22 States requiring UIC programs was published on September 25, 1978. About 85 percent of the injection wells to be regulated are located in this initial group of States. In addition, the Agency has reconsidered its original intentions with regard to bringing the remaining States under the program. Under the original plans, 17 States and territories would not have been listed until mid-1981. As a consequence, there would have been areas in the country which would have lacked controls over underground injection, at least under Federal regulations, even though the disposal of hazardous waste would have been regulated under the Resource Conservation and Recovery Act (RCRA). EPA now plans to subject underground injection to Federal regulation on about the same schedule as hazardous waste disposal under RCRA. An additional 17 States will be listed in May 1979 and the remaining ones in May 1980 so as to preclude even temporary situations where uncontrolled injection could be an alternative to regulated methods of disposal.

Federal Facilities. A number of comments were received on the control of injection wells at Federal facilities. Several of the commenters suggested that the Administrator of EPA should have the authority to waive the need for compliance with a State UIC program in the case of an injection well operated by or for a Federal agency.

The 1977 amendments to the Safe Drinking Water Act have clarified State authority over Federal facilities in this regard. Section 1447 and the legislative history of the Act clearly indicate that Federal agencies, like other well owners or operators, must comply with State UIC requirements. The only exception allowed is in cases where the President determines that a waiver in necessary in the interest of national security. The President's authority is not delegable.

EPA is responsible for promulgating and enforcing the program on Indian lands.

Textual Clarification. A number of commenters made suggestions for dropping or adding definitions, enhancing the clarity and specificity of the regulations, and the like.

These reproposed regulations have been substantially rewritten and many of these helpful comments were taken into account.

General Program Concepts

Corrective Action in the Area of Review

The UIC regulations proposed in 1976 would have required the owners or operators of all wells under Subpart C and D to take appropriate corrective action in the area of review. For Subpart C wells, the area of review was defined as a two mile radius. For oil and gas wells under Subpart D the radius was defined as one-half mile. The owner or operator was also required to tabulate all wells penetrating the injection zone in the area of review and report a variety of information with respect to each such well.

Numerous comments were received with regard to the "area of review concept." Many commenters argued that to collect the level of information required within the specified radii would be, in some cases, impossible, and generally time-consuming, costly, and unnecessary. Nineteen such comments were received with regard to the half mile radius specified for oil and gas related injection wells alone.

Conversely, some commenters held that even the two mile radius was insufficient to embrace all the possible subterranean features that could play a part in contaminating underground sources of drinking water. Other commenters offered suggestions for alternative approaches to the concept,

for example, the use of a "zone of endangering influence" calculated with the use of a mathematical formula or allowing the Director of the State regulatory agency to determine an appropriate area of review in each case.

In response to the helpful public comments and additional information developed by EPA's consultants, the area of review concept has been significantly revised. These revised regulations now contain specific sections describing the Agency's intentions with regard to the area of review and corrective action. Also, the distinction (two miles v. one-half mile) between oil and gas related wells and other wells has been eliminated. The State Director is now given the discretion to choose the method by which he will determine the applicable area of review. He may choose to use a mathematical formula (for example, a modified form of the Theis equation) to calculate the actual zone of endangering influence. Alternatively, he may set a fixed radius based on a number of such criteria as local geology and hydrology but in no event less than one-quarter of a mile. The method of determining the area of review may vary from area to area within a State and may differ for each type of underground injection. The one-quarter mile is a minimum only if a fixed radius is used. If the area of review is calculated, the distance to be used is whatever the formula indicates.

The area of review requirement is not applied to existing oil and gas related wells. The data available to us to date leave some question as to the extent of the environmental problem posed by nearby wells penetrating the injection zone. This suggests that the best course is to apply the requirement to all Class I and Class III wells plus new Class II wells only for the time being. Application of this requirement to existing Class II injection wells was discarded because of cost and because the existence of economic incentives suggests that it is a requirement that can be eased without the sacrifice of environmental protection. A mid-course assessment will be conducted after the first full year of program operation to permit the Agency to reconsider this decision.

Remedial Action v. Prevention

A few commenters requested that provisions be added to these regulations for cleaning up any contamination of an underground source of drinking water which results from injection activities.

Congress obviously intended to provide protection to underground drinking water sources, and therefore, the main thrust of these regulations is to prevent such contamination. EPA has, however, considered adding requirements for aquifer restoration. The best information available to the Agency indicates that the technology of aquifer restoration is costly and the results not always certain. Consequently, these proposed regulations do not establish any specific requirements for such remedial action. However, discretion is given the State Director in a number of instances to specify requirements which could include remedial action. More specifically, broad authority is granted the State Director to set such additional requirements as necessary if monitoring shows that migration of fluids into underground sources of drinking water is taking place. Furthermore, the Director is to specify the manner in which a well is to be abandoned, and the requirements could include a range of remedial action. Finally, the Director is to take immediate action in the case of Class V wells that present a significant risk to the health of persons. Here again, the Director could prescribe remedial action including aquifer restoration if he sees fit.

The Preamble solicits further information on the whole question of remedial action.

The Standard of "Compelling Evidence"

In several instances, the regulations proposed in 1976 allowed the Director to approve technical requirements other than those spelled out in the regulations, for example, for tubing and packer on Subpart C wells, annular injection for Subpart D wells, etc. However, in such cases the Director was to demand "compelling evidence" from the applicant that a comparable level of protection would be achieved for underground sources of drinking water.

Four commenters objected to the standard embodied in the term "compelling evidence." It was argued that this standard could be used as a vehicle to deny permits for even the safest injection operations. EPA has concurred with this opinion and deleted this term from the regulations.

Duration of Permits

The 1976 proposal specified that permits could be issued only for a period of five years. Fifty commenters objected to the five-year duration for UIC permits as being too short. Thirty-two commenters suggested that the permit period extend for the life of the project. Typical reasons cited for extending the permit period included the time required for reinspection, the costs to both operators and regulatory agencies to reapply and hold public hearings on renewal of permits, and the difficulty in obtaining financing for facilities having short-term permits. A few others recommended ten-year permit periods with essentially "automatic" renewals.

As a result of these strong opinions and EPA's re-evaluation of permitting needs, the Director has been given the discretion to issue permits for the life of the facility. In cases where the same facility holds more than one permit under an EPA program, all permits must be reviewed whenever another permit expires, but in no case less often than once every five years. As a result of this review, the Director must decide whether the permit should be continued, modified, or revoked and reissued.

Technical Requirements

Regulation of Oil and Gas Related Wells

The most persistent comment on the 1976 proposal was that the requirements for injection wells associated with oil and gas production, if literally interpreted, would interfere with oil and gas production without significantly increasing protection of water supply sources.

EPA requested commenters to submit data substantiating their comments. The Agency also retained consultants to evaluate this information, collect additional information, and advise EPA of their findings. These findings indicated that changes in the regulations were needed. The regulations have been rewritten in response to these findings so as to minimize interference with the injection of oil and gas related fluids, yet maintain minimum requirements that are essential to assure that underground sources of drinking water are protected.

Major changes from the 1976 proposal are: (1) The requirement for surface casing cemented to protect water to 3,000 mg/l of TDS has been eliminated in existing injection fields; (2) the Director has been given the discretion to regulate existing enhanced recovery and hydrocarbon storage wells by rule, thereby eliminating the burden of reissuing approximately 115,000 permits; and (3) the area of review requirement has been made applicable to new oil and gas related injection wells only. The reproposed regulatory requirements are discussed fully in the body of the Preamble.

Construction and Operating Requirements

One commenter suggested that a list of approved well drilling techniques and

maintenance practices should be drafted, and two commenters believed that ground water sources with up to 10 000 mg/l total dissolved solids (TDS) should be protected by surface casing. However, numerous comments were received stating that the technical requirements in the 1976 proposal were too specific and restrictive. The commenters felt that "across the board" requirements were neither needed nor applicable in many instances.

EPA recognizes the need for a less specific but more goal oriented approach. Flexibility is necessary to allow for the development of the most efficient site-specific operations which take into consideration unique and/or local situations, and to encourage the development of new technology.

Upon further examination, the Agency has decided that the technical requirements could be eased in some cases and that the Director can be given the discretion to allow methods other than those spelled out in the regulations when such alternatives can adequately protect underground sources of drinking water. The more important changes from the 1976 proposal are highlighted below.

1. *Pre-Operation Controls*—Several commenters suggested that a requirement be added to test injection systems prior to operation.

EPA agrees that there is a potential for environmental damage during the construction of the well and that the integrity of the well should be demonstrated before injection begins. These revised regulations clarify and specify that: (1) The Director must approve plans for the testing, drilling and construction of new wells before the plans are carried out; (2) the owner or operator must submit the results of various logs or tests before injection may begin; and (3) the owner or operator must demonstrate the mechanical integrity of the well before injection may begin.

2. *Casing and Cementing*—The 1976 proposal required that Subparts C and D wells protect all underground drinking water sources of 3,000 mg/l of TDS or less, with surface casing cemented to the surface. Twelve comments were received objecting to this requirement.

EPA agrees that the objections had merit. The revised proposal requires that all underground sources of drinking water be adequately protected with casing and cementing. This requirement represents easing in two respects: (1) Continuous cementing back to the surface would no longer be required; and (2) in existing oil and gas injection fields, the Director may continue the current level of protection.

3. *Tubing and Packer*—The earlier proposal required that injection be carried out through tubing with a packer set immediately above the injection zone in the case of both Subparts C and D wells. Twelve comments were received pointing out that this requirement was not applicable in all cases and would virtually eliminate dual purpose and other types of wells which require various forms of annular injection to operate. They also pointed out that the requirement would preclude the use of other technologies, such as hydraulic seals, which in some cases provide better sealing and monitoring capabilities than traditional packer systems.

EPA and its contractors consulted with various industry representatives having expertise in these systems. In light of the information supplied by these individuals, EPA has revised the requirement. Tubing and packer would now be required only for Class I wells. The Director would have the discretion to permit the use of alternatives to tubing and packer in cases where they will provide adequate protection of underground sources of drinking water.

4. *Annular Injection*—Nine commenters objected to the restrictions placed on annular injection by the earlier proposal. They indicated that the regulations would place severe limitations on certain types of secondary and tertiary oil recovery practices, and would result in a net loss of oil production with no increased protection of drinking water sources. They pointed out that with proper design and maintenance, some forms of annular injection could be utilized with no endangerment to ground water sources. Several of these commenters submitted documented case histories to substantiate their views.

After evaluation of this and other additional information, EPA has revised the regulations to allow annular injection between strings of casing and between tubing and casing. However, annular injection between the casing and the hole will not be permitted, as this practice would not allow for protection of underground drinking water sources.

5. *Hydraulic Fracturing*—Twenty-two commenters expressed strong objection to the restriction imposed on hydraulic fracturing of receiving formations. It was argued that these limitations would inhibit commonly used fracturing techniques necessary to enhance oil production and disposal operations. EPA does not intend that hydraulic fracturing for well development be prohibited or discouraged. Therefore, this reproposal has been reworded to clarify EPA's intent. The use of hydraulic fracturing of the injection zone is permitted, but injection pressures must be regulated to eliminate the possibility of fracturing the confining strata above or below the injection zone.

Monitoring and Reporting Requirements

Several commenters suggested that the monitoring, record-keeping, and reporting requirements in the 1976 proposal were excessive and costly. One commenter recommended an inspection program, citing a self-monitoring program as "unrealistic." Three commenters suggested that the Director specify monitoring (frequency and type) as needed for specific operation, and one commenter requested that the Director be required to maintain records for a specified period of time. In addition, questions were raised as to when, under § 146.34, an operator had to notify the Director of the discontinuance of operations and what constituted a discontinuance.

The regulations have been revised to clarify the requirements regarding monitoring, record-keeping, and reporting, and describe the Director's role in setting specific requirements. With the narrowing of the types of injection wells to be included in the revised Class I, it is appropriate to require the continuous monitoring of injection and annulus pressures of all pressure operated wells. The Director will specify periodic monitoring (with regard to frequency and quality parameters) of underground sources of drinking water within the zone of endangering influence. Of particular importance, the Director is given the responsibility to establish monitoring, record-keeping and reporting systems that are adequate to demonstrate the soundness of both new and existing injection facilities, and to detect any malfunctions of such operations which could lead to the contanmination of an underground drinking water source. Owners/operators are required to keep records of the results of their monitoring for three years.

Procedural Requirements

Procedural Requirements Applicable to States

The UIC regulations proposed in 1976 contained procedures and requirements for States which choose to assume and maintain primary enforcement responsibility for the UIC program. These requirements are now reproposed as part of the consolidated 40 CFR Part 123 (as explained in the Preamble).

Major areas of comment, and EPA's response to them, are summarized here.

1. Two commenters expressed concern over the provision in § 146.07(a) of the earlier proposal which required the State to submit an effective UIC program to the Administrator within 270 days of that State being listed in the Federal Register. These commenters noted that possible legislative and administrative delays may make it impossible for a State to meet such a schedule.

The SDWA required that the designated States formulate and submit programs within 270 days after promulgation of the regulations by the EPA. Under the 1977 Amendments to the Act, the time can be extended to 540 days for good cause.

2. The earlier proposal would have required (§ 146.16(a)) each State with primary enforcement responsibility to submit a complete inventory of all injection wells subject to regulation within 12 months from the approval of the State program. Several commenters urged that one year is not enough time and requested that this time period be lengthened.

EPA has considered these comments but decided to retain the requirement. An accurate count of the wells to be regulated is basic to an effective State program. It is also necessary as a base for the allocation of program grant funds among States.

The preparation of inventories for wells already under a State permit (Classes I–III) should not represent a major burden. The Agency also plans to assist States by preparing an initial inventory of Class IV wells. In the case of Class V wells, the owner or operator is required to notify the Director within 6 months of the effective date of the UIC program.

Finally, the time available for the preparation of the initial inventories is actually more than 12 months. It is an eligible cost for program grants and may be undertaken at the time the first grant is received. Therefore, States have almost 2 years to complete the initial inventory.

3. Four commenters felt that it was not feasible to require States to maintain monitoring records in a form admissible as evidence in State enforcement proceedings. This requirement is necessary to provide a workable enforcement program, and, therefore, EPA has determined to retain this requirement in the revised regulation.

4. A number of comments were made that the regulations did not fully protect trade secrets. EPA recognized this inadequacy. 40 CFR 123.16 has been added to conform with Section 1905 of Title 1 of the U.S. Code on protection of trade secrets. It states that all information in the permit application and the comments of all governmental agencies on the application shall be available to EPA and the public without restriction, unless the application specifically identifies the information the disclosure of which would divulge processes entitled to protection as trade secrets and the State passes such claims on to EPA with the information.

5. Finally, comments were received requesting that the regulations clarify what steps EPA would take in the event that a State failed to enforce its UIC program.

40 CFR 123.59 has been added to specify the process EPA intends to follow if it has cause to believe that a State may not be enforcing its program.

Procedural Requirements Applicable to the Permit Issuance Process

1. *Content of Application*—Numerous commenters noted that the amount and nature of information to be submitted with a permit application were inappropriate, and described the requirements as excessive, duplicative, unobtainable, and burdensome. Many of these comments applied to the area of review requirements. Changes in that requirement have already been discussed under that topic above.

This reproposal has also reworded some of the remaining permit application requirements to simplify the information required and expanded the items that need not be submitted if they are already available to the Director.

2. *Area Permits*—Two commenters observed that an operation which drills a large number of wells in a given year could find itself in a endless round of permit applications and public hearings. One recommended that permitting procedures be abbreviated in the case of new underground injection operations located in substantially the same area as previously permitted without hearing and notices.

EPA concurs, and has rewritten the regulations to allow permitting on a project, block, or field basis in certain cases. The Director may authorize additional wells within the specified area by administrative action without hearings, provided the construction of the additional wells is similar to that of the wells already permitted.

3. *Public Participation*—The regulations proposed in 1976 required the permit issuing authority, whether EPA or the State Director, to provide adequate opportunity for public comment and informal hearings on any permit application. A number of adverse comments were received on this requirement. Commenters argued that this requirement would result in additional costs, undue delays in processing the permit and attempts at technical decision-making in an inappropriate forum. Suggestions were also received for limiting the applicability of the requirement in various ways.

EPA has considered these comments and has decided to retain the requirement for effective public participation. First, the SDWA explicitly provides for public participation and public hearings during the processing of permit applications. In addition, the accompanying House Report 93–1185 states (p. 24) that the development of an affirmative public awareness program is an essential attribute of effective State programs. Second, affirmative action to foster public participation in governmental decision-making is a policy of this Administration. Third, effective public participation is a declared objective of EPA. The Agency has recently promulgated regulations (40 CFR Part 25) to specify the public participation required in EPA programs. The requirements applicable to the UIC program which are to be proposed in 40 CFR Parts 123 and 124 conform to the requirements of 40 CFR Part 25. The requirements made applicable to States have been eased to the extent possible and are less exacting than the ones EPA intends to impose on itself when it is the permit issuing authority.

The Agency believes that public participation in governmental decision-making is not only desirable but necessary, and that in the great majority of cases it can be achieved without any unnecessary costs or delays.

Economic Impacts

More than fifteen comments were received on the possible adverse economic impacts of the regulations. EPA retained a consultant to evaluate the costs of various alternative methods for protecting underground sources of drinking water. Based on this analysis, EPA agrees that certain requirements previously proposed were costly and has revised the regulations where possible without sacrificing an acceptable level of environmental protection.

The incremental cost associated with these reproposed regulations is estimated to be $808 million over the first five years of the program, or $162 million per year on the average. Most of this, $665 million over five years, is estimated to be the cost of regulating

injection wells associated with oil and gas production.

Economic impacts were also examined. The Agency's estimate is that these regulations may result in a loss of oil production of 12,000 barrels per day, or about one-tenth of one percent of total annual production. The anticipated effects on other regulated industries are expected to be similarly negligible.

The estimated costs of these reproposed regulations are extensively discussed in the Preamble.

A new Part 146 is proposed to be added to title 40 CFR to read as follows:

PART 146—UNDERGROUND INJECTION CONTROL PROGRAM: CRITERIA AND STANDARDS

Subpart A—General Provisions

Sec.

146.01 Applicability and scope.
146.02 Law authorizing these regulations
146.03 Definitions.
146.04 Underground sources of drinking water.
146.05 Classification of injection wells
146.06 Area of review.
146.07 Corrective action.
146.08 Mechanical integrity.
146.09 Special requirements for wells managing hazardous waste.

Subpart B—Criteria and Standards Applicable to Class I Wells

146.11 General.
146.12 Construction requirements.
146.13 Abandonment of class I wells.
146.14 Operating, monitoring & reporting requirements.
146.15 Information to be considered by the Director prior to the issuance of a permit

Subpart C—Criteria and Standards Applicable to Class II Wells

146.21 General.
146.22 Construction requirements.
146.23 Abandonment of class II wells
146.24 Operating monitoring & reporting requirements.
146.25 Information to be considered by the Director prior to the issuance of a permit
146.26 Regulation of existing enhanced recovery wells and hydrocarbon storage wells by rule.

Subpart D—Criteria And Standards Applicable to Class III Wells

146.31 General.
146.32 Construction requirements.
146.33 Abandonment of class III wells
146.34 Operating, monitoring & reporting requirements.
146.35 Information to be considered by the Director prior to the issuance of a permit.

Subpart E—Criteria and Standards Applicable to Class IV Wells

146.41 General.
146.42 Notification by operators or owners
146.43 Closure of class IV wells.
146.44 Monitoring and reporting requirements.

Subpart F—Criteria and Standards Applicable to Class V Injection Wells

146.51 General.
146.52 Inventory and assessment.
146.53 Requirement.

Authority. Safe Drinking Water Act (the "Act"), Pub. L. 93–523, December 16, 1974, as amended by Pub. L. 95–190, November 16, 1977.

Subpart A—General Provisions

§ 146.01 Applicability and scope.

(a) This part sets forth technical criteria and standards for the requirements established in 40 CFR Part 122, 123, and 124 which also apply to UIC programs.

[*Comment:* 40 CFR Part 122 defines the regulatory framework of EPA administered permit programs. 40 CFR Part 123 describes the elements of an approvable State program and procedures for EPA approval of State participation in the permit programs. 40 CFR Part 124 describes the procedures the Agency will use for issuing permits under the covered programs, and applies to State-administered programs as indicated in 40 CFR Part 123. These three Parts should be read in conjunction with this Part.]

(b) Upon the approval or partial approval by the Administrator of a State UIC program or the establishment of a porgram by the Administrator applicable to a State, any underground injection which is not authorized by the Director for the UIC program is unlawful.

§ 146.02 Law authorizing these regulations.

The law authorizing these regulations and all other UIC program regulations is referenced in 40 CFR Part 122. In summary it includes Sections 1421, 1422, 1423, 1445, 1447 and 1450 of the Public Health Service Act as amended by the SDWA (Pub. L. 93–523) and by the SDWA Amendments of 1977 (Pub. L. 95–190).

§ 146.03 Definitions.

The definitions in 40 CFR 122.03 apply to this part.

§ 146.04 Underground sources of drinking water.

The Director, by regulation and subject to the approval of the Administrator, shall designate as underground sources of drinking water in the State, after public hearing, all aquifers or parts thereof which currently serve as sources of drinking water or which contain water with fewer than 10,000 milligrams per liter of total dissolved solids, except that the Director need not designate an aquifer or part thereof with fewer than 10,000 milligrams per liter of total dissolved solids if the aquifer or part thereof:

(a) Does not currently serve as a source of drinking water; and

(b) Cannot now and will not in the future serve as a source of drinking water because:

(1) It is mineral, oil, or geothermal energy producing;

(2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical; or

(3) It is so contaminated that it would be economically or technologically impractical to render the water fit for human consumption.

§ 146.05 Classification of injection wells.

The Director shall classify injection wells into five classes as required in 40 CFR 122.34.

§ 146.06 Area of review.

(a) The Director shall select the methods by which the area of review shall be established for each injection well or each field, project or area of the State.

(b) The area of review may be defined as either:

(1) The zone of endangering influence as determined in accordance with paragraph (c) of this section; or

(2) An area within a fixed radius around each injection well as determined in accordance with paragraph (d) of this section.

(c) The zone of endangering influence shall be that area the radius of which is the lateral distance from an injection well or injection well pattern in which the pressure change resulting from the injection operation may cause the migration of the injection and/or formation fluid into an underground source of drinking water. Computation of the zone of endangering influence should be based upon but not limited to, the parameters listed below and should be calculated for an injection time period equal to the expected life of the facility. The following Theis equation is an example of one possible objective method:

$$\left[\quad \left(\quad \right) \right]$$

Note.—$\pi a^{**} b = a^{b}$

where:

r = Radius from the injection well (feet)

k=Hydraulic conductivity of the injection zone (feet/day)
H=Thickness of the injection zone (feet)
t=Time of injection (days)
S=Storage coefficient (dimensionless)
Q=Injection rate (cu. ft./day)
h_{fo}=Original hydrostatic head of formation fluid (feet) measured from top of injection zone
h_w=Hydrostatic head of underground source of drinking water (feet) measured from top of injection zone
S_fG_f=Specific gravity of formation fluid (dimensionless)
π=3.142

(d) A fixed radius around the well of not less than ¼ mile may be used. In determining the fixed radius, the following factors shall be taken into consideration: (1) the toxicity of the injected fluids; and (2) the geology, hydrology, population, ground water use, and historical practices in the area.

§ 146.01 Corrective Action.

In determining the adequacy of corrective action proposed by the applicant under 40 CFR 122.38 and in determining the additional steps needed to prevent fluid migration into underground sources of drinking water, the Director shall consider the following criteria and factors:

(a) Toxicity and volume of the injected fluid;

(b) Potentially affected population;

(c) Geology;

(d) Hydrology;

(e) History of the injection operation;

(f) Completion and plugging reports;

(g) Abandonment procedures in effect at the time the well was abandoned; and

(h) Hydraulic connections with underground sources of drinking water.

§ 146.08 Mechanical integrity.

(a) An injection well has mechanical integrity if:

(1) There is no significant leak in the casing, tubing or packer; and

(2) There is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.

(b) Some combination of the following tests shall be used to evaluate the absence of significant leaks under paragraph (a)(1) of this section:

(1) TV monitoring;

(2) Monitoring of annulus pressure;

(3) Radioactive tracer survey;

(4) Casing inspection log;

(5) Pressure test with fluid or gas

(6) Temperature survey;

(7) Flowmeter survey; or

(8) Packer test.

(c) The absence of fluid movement under paragraph (a)(2) of this section may be demonstrated by:

(1) Well records demonstrating the presence of adequate cement to prevent such migration; or

(2) The results of a cement bond log, sonic log, temperature log, density log, or dual neutron log.

(d) The Director may allow the use of a test to demonstrate mechanical integrity other than those listed in paragraphs (b) and (c)(2) of this section with the written approval of the Administrator. To obtain approval, the Director shall submit a written request to the Administrator, which shall set forth the proposed test and all technical data supporting its use. The Administrator shall approve the request if it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the Administrator may be used in all States unless its use is restricted at the time of approval by the Administrator.

(e) In conducting and evaluating the tests enumerated in this section or others to be allowed by the Director, the owner or operator and the Director shall apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director shall review monitoring and other test data submitted since the previous evaluation.

[*Comment:* EPA will issue technical guidance on acceptable methods for conducting and evaluating the permissible tests to demonstrate mechanical integrity.]

§ 146.09 Special requirements for wells managing hazardous wastes.

(a) As provided in 40 CFR 122.44, the owner or operator of any well that is used to inject hazardous wastes accompanied by a manifest or delivery document shall obtain authorization to inject as specified in 40 CFR 122.35 and 36.

(b) In addition to the applicable requirements of 40 CFR Part 122 and 40 CFR Part 146 Subparts B–F, the Director shall, for each facility meeting the requirements of paragraph (a) of this section, require that the owner or operator comply with:

(1) The notification requirements of 40 CFR Part 250, Subpart G (proposed at 43 FR 29911 (July 11, 1978); and

(2) The manifest system, record-keeping, and reporting requirements of 40 CFR 250.43–5(a); (b)(6); (c)(5)(i)–(iii); (c)(5)(iii)(A)–(F) and (H); and (c)(6) (proposed at 43 FR 59003 (December 18, 1978)).

[*Comment:* Wells which inject hazardous wastes qualify as hazardous waste management facilities under the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. 6901 *et seq.* This section is designed to help integrate the regulatory coverage of these wells under RCRA and SDWA by avoiding the imposition of duplicative or unduly burdensome requirements. For a discussion of EPA's efforts in this regard, see the preamble to these regulations and to proposed 40 CFR Part 122.]

Subpart B—Criteria and Standards Applicable to Class I Wells

§ 146.11 General.

(a) This subpart sets forth requirements for underground injection control programs to regulate Class I wells as described in 40 CFR 122.34(a). These include industrial, municipal and nuclear disposal wells.

(b) No existing Class I well may continue to operate for more than 5 years after an underground injection control program becomes effective, unless the owner or operator has obtained a permit for such operation pursuant to 40 CFR 122.36.

[*Comment:* Applications must be filed and permits must be issued in accordance with the permit plan submitted by the State as part of its application for primary enforcement responsibility under 40 CFR 123.42 or promulgated by the Administrator as part of an EPA-administered UIC program. Such permit plans must provide for the issuance of all permits as rapidly as possible, but in no event later than 5 years after the effective date of the UIC program.]

(c) No new Class I well may begin to operate after an underground injection control program becomes effective unless the owner or operator has obtained a permit for such operation pursuant to 40 CFR 122.36.

(d) If the monitoring required under § 146.14(b) indicates the migration of injection or formation fluids into underground sources of drinking water, the Director shall, under 40 CFR 122.42(b)) prescribe such additional requirements for construction, corrective action, operation, monitoring or reporting (including closure of the injection well) as necessary to prevent such migration.

§ 146.12 Construction requirements.

The Director shall, under 40 CFR 122.42(a)(1), prescribe requirements for the construction of Class I injection wells. Existing wells shall achieve compliance with such requirements according to a specific compliance

schedule established by the Director as a condition of the permit. New wells shall be in compliance with construction requirements before injection operations begin. The owner or operator of a proposed injection well shall submit plans for testing, drilling and construction to the Director and obtain the approval of the Director of the initial plans as a condition of the permit. The Director's approval of any modifications of the plans shall be obtained before incorporating them into the construction of the injection well. At a minimum, such requirements shall prescribe that:

(a) Each Class I well shall be sited in such a fashion that it injects into a stratum which is below the deepest underground source of drinking water in the area and has an overlying confining bed that is free of known open faults or fractures within the area of review.

(b) Each Class I well shall be cased and cemented to prevent the upward migration of fluids into or between underground sources of drinking water. In determining and specifying casing and cementing requirements, the Director shall consider the following factors:

(1) Depth to the injection zone;

(2) Injection pressure (external pressure, internal pressure, axial loading, etc.);

(3) Hole size;

(4) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, construction material, etc.);

(5) Corrosiveness of formation fluids; and

(6) Lithology of possible injection and confining intervals.

(c) All Class I injection wells, except for those municipal wells injecting only non-corrosive wastes, shall inject fluids through tubing and packer set immediately above the injection zone.

(1) The Director may allow the use of an alternative to tubing and packer set immediately above the injection zone with the written approval of the Administrator. To obtain approval, the Director shall submit a written request to the Administrator; which shall set forth the proposed alternative and all technical data supporting its use. The Administrator shall approve the request if it will reliably provide a comparable level of protection to underground sources of drinking water. The Administrator may, in his discretion, approve an alternative method solely for an individual well or for general use.

[*Comment:* This approval responsibility may be delegated to the Regional Administrator. Reports on the use of alternatives are required under 40 CFR 123.46.]

(2) In determining and specifying requirements for tubing and packer, the Director shall consider the following factors:

(i) Depth of setting;

(ii) Characteristics of injection fluid (chemical content, density, etc.);

(iii) Injection pressure;

(iv) Annular pressure;

(v) Rate and volume of injected fluid; and

(vi) Size of casing.

(d) All parts of Class I wells which will come into contact with corrosive fluids (whether injected or in the native environment) shall be constructed of corrosion resistant material.

(e) Logs and other tests shall be conducted during the drilling and construction of new Class I wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified person and submitted to the Director. At a minimum, such logs and tests shall include:

(1) Directional surveys conducted on all holes, including pilot holes, at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

(2) For surface casing intended to protect underground sources of drinking water:

(i) Resistivity, spontaneous potential, and caliper logs before the casing is installed; and

(ii) A cement bond, temperature, or density log after the casing is set and cemented.

(3) For intermediate and long strings of casing intended to facilitate injection:

(i) Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;

(ii) Fracture finder logs in appropriate situations as prescribed by the Director; and

(iii) A cement bond, temperature, or density log after the casing is set and cemented.

(f) At a minimum, the following information concerning the injection formation shall be determined for new Class I wells, and submitted to the Director in an integrated form:

(1) Fluid pressure.

(2) Temperature.

(3) Fracture pressure.

(4) Other physical and chemical characteristics of the injection matrix.

(5) Physical and chemical characteristics of the formation fluids.

(6) Compatibility of injected fluids with formation fluids.

§ 146.13 Abandonment of class I wells.

(a) Class I wells shall be abandoned in a manner, to be prescribed by the Director under 40 CFR 122.35(a)(1) and 122.42(a)(6), which will not allow the migration of fluids either into or between underground sources of drinking water. At a minimum, the well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or a comparable method prescribed by the Director, prior to the placement of the cement plug(s).

(b) The owner or operator shall assure, through a performance bond or other appropriate means, the availability of resources necessary for the proper abandonment of the well as required in 40 CFR 122.42(a)(7).

§ 146.14 Operating, monitoring and reporting requirements.

(a) Operating Requirements:

The Director shall, under 40 CFR 122.42(a)(3), prescribe requirements governing the operation of injection wells in the permit. Requirements for Class I shall, at a minimum, specify that:

(1) Injection pressure at the well head shall not exceed a maximum which shall be calculated so as to assure that the bottom hole pressure during injection does not propagate fractures in the injection formation, initiate fractures in the confining strata or cause the migration of injection or formation fluids into a underground source of drinking water.

(2) Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

(3) Unless an alternative to tubing and packer has been approved under § 146.12(c)(1), the annulus between the tubing and the long string of casings shall be filled with a fluid approved by the Director and an appropriate pressure shall be maintained on the annulus.

(b) Monitoring Requirements: The Director shall, by rule under 40 CFR 122.35(a)(1) and in permits under 40 CFR 122.42(a)(4), prescribe requirements for the monitoring of the injection fluids, the injection well, and the underground sources of drinking water that could potentially be affected by the injection. Monitoring requirements shall, at a minimum, include:

(1) Testing of the injected fluids with sufficient frequency to yield representative data of its characteristics;

(2) Continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string;

(3) Demonstration of mechanical integrity pursuant to § 146.08 at least once every five years during the life of the well;

(4) Type, number and location of wells to monitor any migration of fluids into and pressure in the underground sources of drinking water, the parameters to be measured and the frequency of monitoring shall be specified; and

(5) The maintenance of the results of required monitoring for at least three years as prescribed in 40 CFR 122.14.

(c) Reporting Requirements: The Director shall, by rule under 40 CFR 122.35(a)(1) and in permits under 40 CFR 122.42(a)(4), prescribe the form, manner, content and frequency of reporting by the operator. The operator shall be required to identify the types of tests and methods used to generate the monitoring data. At a minimum, requirements shall include:

(1) Quarterly reports to the Director on:

(i) The physical, chemical and other relevant characteristics of injection fluids;

(ii) Injection pressure, flow rate and volume, and annular pressure; and

(iii) Monitoring of pressure and quality in underground sources of drinking water.

(2) Reporting with the first quarterly report after the completion of:

(i) Periodic demonstration of mechanical integrity; and

(ii) Any other test of the injection well conducted by the permittee if required by the Director.

(3) Written notice to the Director within 30 days after any compliance schedule date whether the permittee has or has not complied with the requirement in question;

(4) Immediate reports to the Director of any violation of a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water.

§ 146.15 Information to be considered by the Director prior to the issuance of a permit.

Prior to the issuance of a permit for an existing or new Class I well the Director shall consider the following information. For an existing Class I well the Director may rely on the existing State permit file for those items of information listed below which are current and accurate in the State file. For a new Class I well, the Director shall require the submission of all the information listed below. For both existing and new Class I wells, paragraphs (c), (d), and (f) of this section may be included in the application by reference if the reference is specific in identifying the maps in question and the maps are readily available to the Director. In cases where EPA issues the permit all the information in this Section must be submitted to the Administrator.

(a) Information as specified in 40 CFR 122.36.

(b) A map showing the injection well(s) for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number, or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map.

(c) A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone. Such data shall include a description of each well's type, location, depth, record of plugging and/or completion, and any additional information on these wells as the Director may require;

(d) Maps and cross sections indicating the general vertical and lateral limits of all underground sources of drinking water within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection;

(e) Maps and cross sections detailing the geologic structure of the local area;

(f) Generalized maps and cross sections illustrating the regional geologic setting;

(g) Operating data:

(1) Average and maximum daily rate and volume of the fluid to be injected;

(2) Average and maximum injection pressure; and

(3) Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids.

(h) Formation testing program to obtain an analysis of the chemical, physical, and radiological characteristics of and other information on the receiving formation;

(i) Stimulation program;

(j) Injection procedure;

(k) Engineering drawings of the surface and subsurface construction details of the system;

(l) Contingency plans to cope with all shut-ins or well failures so as to prevent migration of contaminating fluids into any underground source of drinking water;

(m) All available logging and testing program data on the well;

(n) Plans for meeting the monitoring requirements in § 146.14(b);

(o) For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under 40 CFR 122.38;

(p) Construction procedures including cementing and casing program, logging procedures, directional survey, and drilling, testing, and coring program;

(q) Feasibility of monitoring permeable strata located between the injection zone and undergound sources of drinking water;

(r) Compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining strata;

(s) A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by 40 CFR 122.42(a)(7); and

(t) A satisfactory demonstration of mechanical integrity as required by § 122.36(d).

Subpart C—Criteria and Standards Applicable to Class II Wells

§ 146.21 General.

(a) This subpart sets forth requirements for underground injection control programs to regulate enhanced recovery, hydrocarbon storage, produced fluid and other Class II injection wells described in 40 CFR 122.34(b).

(b) Except as provided in paragraph (d) of this section, no existing Class II well may continue to operate for more than 5 years after an underground injection control program becomes effective, unless the owner or operator has obtained a permit for such operation pursuant to 40 CFR 122.36.

[*Comment:* Applications must be filed and permits must be issued in accordance with the permit plan submitted by the State as part of its application for primary enforcement responsibility under 40 CFR 123.42 or promulgated by the Administrator as part of an EPA-administered UIC program. Such permit plans must provide for the issuance of all permits as rapidly as possible, but in no event later than 5 years after the effective date of the UIC program.]

(c) No new Class II well may begin to operate after an underground injection control program becomes effective unless the owner or operator has obtained a permit for such operation pursuant to 40 CFR 122.36.

(d) Notwithstanding the provisions of paragraph (b) of this section the Director may regulate existing enhanced recovery and existing hydrocarbon storage wells by rule, as provided in 40 CFR 122.35(a)(2).

(e) The director may under 40 CFR 122.38, disregard the provisions of § 146.06 (area of review) and § 146.07 (corrective action) when reviewing an application to permit an existing Class II well.

(f) If the monitoring required under § 146.24(b) indicates the migration of injection or formation fluids into underground sources of drinking water, the Director shall, under 40 CFR 122.42(b), prescribe such additional requirements for construction, corrective action, operation, monitoring or reporting (including closure of the injection well) as necessary to prevent such migration.

§ 146.22 Construction requirements.

The Director shall prescribe requirements for the construction of Class II injection wells. Existing produced fluid disposal wells shall achieve compliance with such requirements according to a specific compliance schedule established by the Director as a condition of the permit under 40 CFR 122.42(a)(1). Existing enhanced recovery and hydrocarbon storage wells shall be subject to general compliance schedules established by rule as provided in 40 CFR 122.35(a)(2).

New wells shall be in compliance with construction requirements before injection operations begin. The owner or operator of a proposed injection well shall submit plans for testing, drilling and construction to the Director and obtain the approval of the Director of the initial plans as a condition of the permit. The Director's approval of any modifications of the plans shall be obtained before incorporating them into the construction of the injection well. At a minimum, such requirements shall specify that:

(a) All new Class II wells shall be sited in such a fashion that they inject into a stratum which has confining beds that are free of known open faults or fractures within the area of review.

(b) All Class II injection wells shall be cased and cemented to prevent migration of fluids into or between underground sources of drinking water. In determining and specifying casing and cementing requirements, the Director shall consider the following factors:

(1) Depth to the injection zone;

(2) Injection pressure (external pressure, internal pressure, axial loading, etc.);

(3) Hole size;

(4) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, construction material, etc.);

(5) Corrosiveness of native fluids; and

(6) Lithology of possible injection and confining intervals.

(c) The Director need not impose the requirement in paragraph (b) of this section on Class II wells located in existing injection fields if:

(1) Regulatory controls existed prior to the effective date of the applicable underground injection control program with respect to casing and cementing;

(2) The Director imposes those regulatory controls which have historically been present; and

(3) Well injection will not result in the migration of fluids into an underground source of drinking water so as to create a significant risk to the health of persons using the source as drinking water.

(d) Logs and other tests shall be conducted during the drilling and construction of new Class II wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified person and submitted to the Director. At a minimum, such logs and tests shall include:

(1) Directional surveys conducted on all holes, including pilot holes, at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

(2) For surface casing intended to protect underground sources of drinking water:

(i) Resistivity, spontaneous potential, and caliper logs before the casing is installed; and

(ii) A cement bond, temperature, or density log after the casing is set and cemented.

(3) For intermediate and long strings of casing intended to facilitate injection:

(i) Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;

(ii) Fracture finder logs in appropriate situations as prescribed by the Director; and

(iii) A cement bond, temperature, or density log after the casing is set and cemented.

(e) At a minimum, the following information concerning the injection formation shall be determined for new Class II wells, and submitted to the Director in an integrated form:

(1) Fluid pressure.

(2) Temperature.

(3) Fracture pressure.

(4) Other physical and chemical characteristics of the injection matrix.

(5) Physical and chemical characteristics of the formation fluids.

(6) Compatibility of injected fluids with formation fluids.

§ 146.23 Abandoment of class II wells.

(a) Class II wells shall be abandoned in a manner, to be prescribed by the Director under 40 CFR 122.35(a) (1) and (2) and 122.42(a)(6) which will not allow the migration of fluids either into or between underground soures of drinking water. At a minimum, the well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or a comparable method prescribed by the Director, prior to the placement of the cement plug(s).

(b) Owners or operators shall assure, through a performance bond or other appropriate means, the availability of resources necessary for the proper abandonment of the well as required in 40 CFR 122.42(a)(7).

§ 146.24 Operating, monitoring, and reporting requirements.

(a) Operating Requirements: The Director shall prescribe requirements governing the operation of injection wells. For existing produced fluid disposal wells and all new wells, operating requirements shall be included as conditions of each permit as prescribed in 40 CFR 122.42(a)(3). For existing enhances recovery and hydrocarbon storage wells, operating requirements shall be established by rule under 40 CFR 122.35(a)(2). Requirements for Class II wells shall, at a minimum, include that:

(1) Injection pressure at the surface shall not exceed a maximum which shall be calculated so as to assure that the bottom hole pressure during injection does not initiate fractures in the confining strata or cause the migration of injection or formation fluids into an underground source of drinking water.

(2) Injection between the outermost casing protecting underground sources of drinking water and the well bore shall be prohibited.

(b) Monitoring Requirements: The Director shall prescribe monitoring requirements for Class II wells. For existing produced fluid disposal wells and all new wells, monitoring

requirements shall be included in the interim rule under 40 CFR 122.35(a)(1) and as conditions of each permit under 40 CFR 122.42(a)(4). For existing enhanced recovery and hydrocarbon storage wells, monitoring requirements whall be established by rule under 40 CFR 122.35(a)(2). Such monitoring requirements shall, at a minimum, include:

(1) Monitoring of the nature of injected fluids at intervals sufficiently frequent to yield data representative of its characteristics.

(2) Monitoring and injection pressure, flow rate, and cumulative volume at least with the following frequencies:

(i) Weekly for salt water disposal operations;

(ii) Monthly for enhanced recovery operations;

(iii) Daily during the injection or withdrawal of stored hydrocarbons; and

(iv) Daily during the injection phase of cyclic steam operations.

(3) Demonstration of mechanical integrity pursuant to § 146.08 at least once every five years during the life of the injection well.

(4) Maintenance of the results of all monitoring for at least three years as precribed in 40 CFR 122.14.

(c) Reporting Requirements: The Director shall establish the form, manner, content and frequency of reporting by the owner or operator. For existing produced fluid disposal wells and all new wells, reporting requirements shall be included in the interim rule under 40 CFR 122.35(a)(1) and as conditions of each permit under 40 CFR 122.42(a)(4). For existing enhanced recovery and hydrocarbon storage wells, reporting requirements shall be established by rule under 40 CFR 122.35(a)(2). The owner or operator shall be required to identify the types of tests and methods used to generate the monitoring data. At a minimum, requirements shall include:

(1) An annual report to the Director summarizing the results of the monitoring required under paragraph (b) of this section.

(2) The immediate reporting to the Director of any violation of a permit condition or rule, or any malfunction of the injection system which may cause the migration of the fluids into underground sources of drinking water.

(3) Written notice to the Director within 30 days after any compliance schedule date of whether the permittee has or has not complied with the requirement in question.

§ 146.25 Information to be Considered by the Director Prior to the Issuance of a Permit.

Prior to the issuance of a permit for an existing or new Class II well, the Director shall consider the following information. For an existing Class II disposal well, the Director may rely on the existing State permit file for those items of information listed below which are current and accurate in the State file. For a new Class II well the Director shall, pursuant to 40 CFR 122.36(c), require the submission of all of the information listed below. The information required in paragraphs (b), (c), and (f) of this section may be included by reference if the reference is specific in identifying the information in question and if it is readily available to the Director. In cases where EPA issues the permit, all the information in this Section is to be submitted to the Administrator.

(a) Information required in 40 CFR 122.36, as appropriate.

(b) A map showing the injection well(s) for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number, or name, and location of all producing wells, injection wells, abandoned wells, dry holes and water wells. Only wells of public record are required to be included on this map. This requirements does not apply to existing Class II wells.

(c) A tabulation of data on all wells within the area of review of a new Class II well which penetrate the proposed injection zone. Such data shall include a description of each well's type, location, depth, record of plugging and/or completion, and any additional information the Director may require. This requirement does not apply to existing Class II wells.

(d) Operating data:

(1) Anticipated average and maximum daily rate and volume of injected fluids;

(2) Anticipated average and maximum injection pressure; and

(3) Source, and an analysis of the physical and chemical characteristics of the injection fluid.

(e) Appropriate geological data on the injection zone and confining strata including lithologic description, geological name, thickness, depth and area of extent;

(f) Geologic name, lateral extent and depth to top and bottom of all underground sources of drinking water which may be affected by the injection;

(g) Logging and testing program data on the well;

(h) Engineering drawings of the surface and subsurface construction details of the system;

(i) Formation testing program;

(j) Stimulation program;

(k) Injection procedure;

(l) Contingency plans to cope with all shut-ins or well failures so as to prevent migration of contaminating fluids into any underground source of drinking water;

(m) Plans for meeting the monitoring requirements of § 146.24(b);

(n) In the case of new injection wells, the corrective action proposed to be taken by the applicant under 40 CFR 122.38;

(o) A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by 40 CFR 122.42(a)(7); and

(p) A satisfactory demonstration of mechanical integrity as required in § 122.36(d).

§ 146.26 Regulation of Existing Enhanced Recovery Wells and Hydrocarbon Storage Wells by Rule.

Rules adopted to regulate existing enhanced recovery wells and hydrocarbon storage wells shall, as stated in 40 CFR 122.35(a)(2), at a minimum apply the relevant construction, abandonment, operating, monitoring and reporting requirements in §§ 146.22, 146.23 and 146.24.

Subpart D—Criteria and Standards Applicable to Class III Wells

§ 146.31 General

(a) This Subpart sets forth requirements for underground injection control programs to regulate Class III wells. This includes Frasch process, in situ gasification, solution mining, geothermal and othe wells described in 40 CFR 122.34(c).

(b) No existing Class III well may continue to operate for more than 5 years after an applicable underground injection control program becomes effective, unless the owner or operator has obtained a permit for such operation pursuant to 40 CFR 122.36.

[*Comment:* Applications must be filed and permits must be issued in accordance with the permit plan submitted by the State as part of its application for primary enforcement responsibility under 40 CFR 123.42 or promulgated by the Administrator as part of an EPA-adminstered UIC program. Such permit plans must provide for the issuance of all permits as rapidly as possible, but in no event later than 5 years after the effective date of the UIC program.]

(c) No new Class III well may begin to operate after an applicable underground injection control program becomes effective unless the owner or operator has obtained a permit for such operation pursuant to 40 CFR 122.36.

(d) If the monitoring required under § 146.34(b) indicates the migration of injection of formation fluids into underground sources of drinking water, the Director shall, under 40 CFR 122.42(b), prescribe such additional requirements for construction, corrective action, operation, monitoring or reporting (including closure of the injection well) as necessary to prevent such migration.

§ 146.32 Construction Requirements.

The Director shall, under 40 CFR 122.42(a)(1), prescribe requirements for the construction of Class III injection wells. Existing wells shall achieve compliance with such requirements according to a specific compliance schedule established by the Director as a condition of the permit. New wells shall be in compliance with construction requirements before injection operations begin. The owner or operator of a proposed injection well shall submit plans for testing, drilling and construction to the Director and obtain the approval of the Director of the initial plans as a condition of the permit. The Director's approval of any modifications of the plans shall be obtained before incorporating them into the construction of the injection well. At a minimum, such requirements shall specify that:

(a) All Class III wells shall be cased and cemented to prevent the migration of fluids into and between underground sources of drinking water. In determining and specifying casing and cementing requirements, the Director shall consider the following factors.

(1) Depth to the injection zone;

(2) Injection pressure (external pressure, internal pressure, axial loading, etc.);

(3) Hole size;

(4) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, construction material, etc.);

(5) Corrosiveness of native fluids; and

(6) Lithology of possible injection and confining intervals.

(b) All parts of Class III wells which will come into contact with corrosive fluids (whether injected or in the native environment) Shall be constructed of corrosive resistant material.

(c) Appropriate logs and other tests shall be conducted during the drilling and construction of new Class III wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified person and submitted to the Director. The Director shall specify the logs and tests appropriate to each type of Class III well based on the intended function, depth construction and other characteristics of the well. At a minimum, such logs and tests, shall, as appropriate, include:

(1) Directional surveys conducted on all holes, including pilot holes, at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

(2) For surface casing intended to protect undeground sources of drinking water:

(i) Resistivity, spontaneous potential, and caliper logs before the casing is installed; and

(ii) A cement bond, temperature, or density log after the casing is set and cemented.

(3) For intermediate and long strings of casing intended to facilitate injection:

(i) Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;

(ii) Fracture finder logs in appropriate situations as prescribed by the Director; and

(iii) A cement bond, temperature, or density log after the casing is set and cemented.

(d) At a minimum, the following information concerning the injection formation shall be determined for new Class III wells, and submitted to the Director in an integrated form:

(1) Fluid pressure.

(2) Temperature.

(3) Fracture pressure.

(4) Other physical and chemical characteristics of the injection matrix.

(5) Physical and chemical characteristics of the formation fluids.

(6) Compatibility of injected fluids with formation fluids.

(e) A system of at least five monitoring wells shall be installed at each Class III site and located so as to maximize the probability of detecting any horizontal or vertical fluid excursion from the injection zone. In the case of new Class III wells, the natural fluid level and water quality in the injection area shall be established before the operation of the injection well is begun.

§ 146.33 Abandonment of Class III Wells.

(a) Class III wells shall be abandoned in a manner, prescribed by the Director, under 40 CFR 122.35(a)(1) and 122.42(a)(6), which will not allow the migration of fluids either into or between underground sources of drinking water. At a minimum, the well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or a comparable method prescribed by the Director, prior to the placement of the cement plug(s).

(b) The owners or operators shall assure, through a performance bond or other appropriate means, the availability of resources necessary for the proper abandonment of the well as required in 40 CFR 122.42(a)(7).

§ 146.34 Operating, Monitoring and Reporting Requirements.

(a) Operating Requirements: The Director shall, under 40 CFR 122.42(a)(3), prescribe requirements governing the operation of injection wells in the permit. Requirements for Class III wells shall, at a minimum, include that:

(1) Injection pressure at the well head shall be controlled to prevent the migration of fluids into underground sources of drinking water;

(2) Injection between the outermost casing protecting underground sources of drinking water and the well bore shall be prohibited.

(b) Monitoring Requirements: The Director shall, by rule under 40 CFR 122.35(a)(1) and in permits under 40 CFR 122.42(a)(4), prescribe requirements for the monitoring of the injection fluids, the injection well, and underground sources of drinking water in the vicinity that could potentially be affected by the injection. Monitoring requirements shall, at a minimum, include:

(1) Testing of the physical and chemical characteristics of the injected fluid with sufficient frequency to yield representative data of its characteristics;

(2) Installation of continuous recording devices and continuous monitoring of the injection pressure, flow rate and volume;

(3) Demonstration of mechanical integrity pursuant to § 146.08 at least once every five years during the life of the well;

(4) Weekly monitoring of fluid level and the parameters chosen to measure water quality in the formation through the monitoring wells;

(5) Quarterly monitoring of water supply wells adjacent to the injection site to detect any excursion from the injection site; and

(6) The maintenance of the results of required monitoring for three years pursuant to 40 CFR 122.14.

(c) Reporting Requirements: The Director shall, by rule under 40 CFR

122.35(a)(1) and in permits under § 122.42(a)(4), prescribe the form, manner, content and frequency of reporting by the permittee. The permittee shall be required to identify the types of tests and methods used to generate the monitoring data. At a minimum, requirements shall include:

(1) Quarterly reporting to the Director on required monitoring;

(2) Results of mechanical integrity and any other periodic test required by the Director reported with the first regular quarterly report after the completion of the test;

(3) Written notice to the Director within 30 days of any compliance schedule date of whether the permittee has or has not complied with the requirement in question; and

(4) Immediate reports to the Director or any violation of a permit condition of malfunction of the injection system which may cause fluid migration into underground sources of drinking water.

§ 146.35 Information to be Considered by the Director Prior to the Issuance of a Permit.

Prior to the issuance of a permit for an existing or new Class III well, the Director shall consider the following information. For an existing Class III injection operation the Director may rely on the existing permit file for those items of information listed below which are current and accurate in the State file. For a new Class III injection well the Director shall require the submission of all the information listed below. For both existing and new Class III wells, paragraphs (b), (c), (e), and (f) of this section may be included by reference if the maps are specifically identified and readily available to the Director. In cases where EPA issues the permit, all the information in this section must be submitted to the Administrator.

(a) Information required in 40 CFR 122.36, as appropriate.

(b) A map showing the injection well(s) for which the permit is sought and the applicable area of review. Within the area of review, the map must show the number, or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, mines (surface and subsurface), quarries, public water systems, water wells and other pertinent surface features including residences, and roads. The map should also show faults if known or suspected. Only information of public record is required to be included on this map.

(c) Maps and cross sections indicating the vertical and lateral limits of all underground sources of drinking water within the area of review, their position relative to the injection formation, and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection.

(d) Maps and cross sections detailing the geologic structure of the local area;

(e) Generalized maps and cross sections illustrating the regional geologic setting;

(f) A tabulation of data on all wells within the area of review which penetrate the proposed injection zone. Such data shall include a decription of each well's type, location, depth, record of plugging and completion, and such other information as the Director may require.

(g) Operating data:

(1) Anticipated maximum daily rate and volume of fluid to be injected;

(2) Maximum injection pressure;

(3) Source and an analysis of the chemical, physical, and radiological characteristics of the injection fluid; and

(4) An anaylsis of the physical and chemical characteristics of the formation;

(h) Formation testing program;

(i) Stimulation program;

(j) Injection procedure;

(k) Engineering drawings of the surface and subsurface construction details of the system;

(l) Plans (including maps) for meeting the monitoring requirements of § 146.34(b);

(m) Expected changes in pressure, native fluid displacement, direction of movement of injection fluid;

(n) Contingency plans to cope with all shut-ins or well failures so as to prevent the migration of contaminating fluids into underground sources of drinking water;

(o) All available logging and testing data on the well;

(p) The corrective action proposed to be taken under 40 CFR 122.38.

(q) A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by 40 CFR 122.42(a)(7); and

(r) A satisfactory demonstration of mechanical intergrity as required by 40 CFR 122.36(d).

Subpart E—Criteria and Standards Applicable to Class IV Wells

§ 146.41 General.

(a) This Subpart sets forth criteria and standards for underground injection control programs to regulate wells, including non-residential septic system wells, used by generators of hazardous wastes and owners and operators of hazardous waste management facilities (as defined in 40 CFR 122.3(b)) to inject into or above strata that contain an underground source of drinking water.

(b) All new Class IV wells are prohibited.

§ 146.42 Notification by Owners or Operators.

The owner or operator of an existing Class IV well shall submit to the Director:

(a) Notice of the existence of any Class IV well under his control; and

(b) Information regarding the well.

[*Comment:* Information on Class IV wells will be gathered under the hazardous waste management program mandated by the Resource Conservation and Recovery Act. Regulations issued under that Act (40 CFR 122.25) require generators of hazardous wastes and owners or operators of hazardous waste management facilities to notify EPA within 90 days of the promulgation of the regulations and to file Part A of their permit applications within an additional 90 days. Owners or operators will be required to file information on Class IV wells as part of this process.]

§ 146.43 Closure of Class IV Wells.

(a) The Director shall formulate an enforcement strategy resulting in closure of all Class IV wells at the earliest date but in no event later than three years after the effective date of the applicable underground injection control program.

(b) In determining the enforcement strategy and time allowed for closure, the Director shall consider the following criteria:

(1) Population relying on the underground source of drinking water affected or potentially affected by the injection;

(2) Local geology and hydrology;

(3) Toxicity and volume of injected fluid; and

(4) Injection well density.

(c) The owners or operators of Class IV wells shall be notified by certified mail of the time by which closure must be accomplished as decided upon by the Director and, if appropriate, of a compliance schedule leading to closure.

(d) Nothing in this Subpart is intended to limit the Director in taking immediate action necessary to protect the health of persons.

§ 146.44 Monitoring and Reporting Requirements.

The Director shall, by rule under 40 CFR 122.35(a)(3), prescribe monitoring and reporting requirements for existing Class IV wells while they are operating.

(a) Monitoring requirements shall, at a minimum include:

(1) Record-keeping as required in 40 CFR 250.43–5(c) (1) and (2);

(2) Weekly monitoring of existing water supply wells in the vicinity for parameters based upon the characteristics of the injection fluids;

(3) Maintenance of the results of monitoring pursuant to 40 CFR 122.14.

(b) Reporting requirements shall prescribe the form, manner, content and frequency of reports to the Director. The permittee shall be required to identify the types of tests and methods used to generate the monitoring data. At a minimum, the requirements shall include:

(1) Quarterly reporting of the results of monitoring required under paragraph (a) of this section;

(2) Immediate notification to the Director of any change in the concentration of any parameter measured at an existing water supply well; and

(3) Written notification to the Director within 30 days after any compliance schedule date of whether the owner or operator has or has not complied with the requirement in question.

Subpart F—Criteria and Standards Applicable to Class V Injection Wells

§ 146.51 General.

This subpart sets forth requirements for underground injection control programs to regulate all injection not regulated in Subparts B, C, D, and E. Generally, wells covered by this Subpart inject non-hazardous fluids into strata that contain underground sources of drinking water. It includes but is not limited to the following types of injection wells: waste disposal wells, such as dry wells, non-residential septic system wells, and sand backfill wells; and recharge wells, such as drainage wells, cooling water return flow wells, air conditioning return flow wells, salt water barrier wells and subsidence control wells (not associated with oil and gas production).

§ 146.52 Inventory and Assessment.

(a) The owner or operator of any Class V well shall, within six months of the effective date of an underground injection control program, notify the Director of the existence of any well meeting the definitions of Class V under his control, and submit a description of:

(1) The construction features of the well;

(2) The nature and volume of injected fluids;

(3) The alternative means of disposal available to the operator; and

(4) The environmental and economic consequences of well disposal and its alternatives.

(b) Within 2 years of approval of the State program the Director will make and report to EPA:

(1) An assessment of the contamination potential of the Class V wells using information supplied by the operator and hydrogeological data available to the State;

(2) An assessment of the available corrective alternatives where appropriate and their environmental and economic consequences; and

(3) Recommendations both for the most appropriate regulatory approaches and for remedial actions where appropriate.

§ 146.53 Requirement.

If at any time the Director gains knowledge of a Class V well which presents a significant risk to the health of persons, he/she shall, under 40 CFR 122.46(b), prescribe such action as necessary (including the immediate closure of the injection well) to remove such risk.

[FRL 1069–4]
[FR Doc. 79–12092 Filed 4–19–79; 8:45 am]
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ENVIRONMENTAL PROTECTION AGENCY

Grants for State Underground Water Source Protection Programs Class Deviation

Under authority of 40 CFR 30.1000, EPA has issued a class deviation from the provisions of 40 CFR 35.656(b) and 35.670–3 for the State underground water source protection program grants awarded under section 1443(b) of the Safe Drinking Water Act, as amended.

EPA promulgated the State underground water source protection grant regulations on October 12, 1978 (43 FR 47130) with the expectation that the underground injection control regulations would be reproposed in 40 CFR Part 146 (originally proposed on August 31, 1976 in 41 FR 36730) by December. These regulations are reproposed in this edition of the **Federal Register.**

The delay in publication of the reproposed regulations affects the application submission and reallotment date requirements in the grant regulations. 40 CFR 35.670–3(a) and (b) require, in part, that eligible States must submit the fiscal year 1979 grant applications to the Regional Administrator by March 1, 1979, and that a draft State program plan for fiscal year 1980 grants be submitted to the Regional Administrator by June 1, 1979. 40 CFR 35.656(b) provides that EPA will reallot any remaining unobligated funds to eligible States no later than April 1. On April 9, 1979, EPA approved a deviation to modify the reallotment date, waive the draft plan submission requirement for fiscal year 1980 grants, and extend the grant application period of eligible States for fiscal year 1979 grants until 30 days after reproposal of the underground injection control regulations.

Under our policy to publish class deviations in the **Federal Register**, EPA is publishing the deviation as part of this notice.

FOR FURTHER INFORMATION CONTACT:
Mr. Alexander J. Greene, Director, Grants Administration Division (PM–216), Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460 (Tel No. 202–755–0850).

Dated: April 9, 1979.

Bill Drayton,
Assistant Administrator for Planning and Management.

Thomas C. Jorling,
Assistant Administrator for Water and Waste Management.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Date: April 11, 1979.

Subject: Class Deviation from 40 CFR 35.656(b) and 35.670–3, State Underground Water Source Protection Program Grants.

From: Alexander J. Greene, Director, Grants Administration Division (PM–216).

To: Regional Administrators.

EPA promulgated grant regulations for the State underground water source protection program grants on October 12, 1978 (43 FR 47130). The preamble to these regulations references the underground injection control regulations to be reproposed in 40 CFR Part 146 (proposed in 41 FR 36730 on August 31, 1976). Publication of the reproposed regulations has been delayed beyond the anticipated time of December 1978, or January 1979. On April 3, 1979, the Administrator approved these regulations for reproposal in the **Federal Register.** The delay in reproposal of the underground injection control regulations necessitates some temporary changes to the State underground water source protection program grant regulations. I am approving deviations for the fiscal years 1979 or 1980 grants as provided below.

1. *Section 35.670–3(a).* This section requires that fiscal year 1979 grant applications be submitted to the Regional Administrator by March 1, 1979.

This deviation approval extends the grant application period for States eligible for fiscal year 1979 grants until 30 days after the date of publication of the reproposed underground injection control regulations.

2. *Section 35.670–3(b).* This section requires, in part, that for a fiscal year 1980 grant an eligible State must submit a draft State program plan to the Regional Administrator no later than June 1, 1979.

This deviation approval waives the requirement for the draft program plan for fiscal year 1980 grants, provided the States work closely with the Regional Offices in the development of their plans.

3. *Section 35.656(b).* This section provides, in part, that no later than April 1, the Administrator will reallot remaining unobligated funds to eligible States.

This deviation approval changes this provision for reallocation of the fiscal year 1979 funds to no later than 60 days after the date of publication of the reproposed underground injection control regulations.

All other requirements of the State underground water source protection program grant regulations remain in full effect for the fiscal year 1979 and subsequent year grant awards.

Dated: April 9, 1979.

Bill Drayton,
Assistant Administrator for Planning and Management.

Thomas C. Jorling,
Assistant Administrator for Water and Waste Management.

[FRL 1203–4]
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